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Universal System Air Conditioner

SVC MANUAL(Exploded View)

CAUTION

Before Servicing the unit, read the safety precautions in General SVC manual.
Only for authorized service personnel.

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I. Indoor Units

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Ceiling Cassette 4-way **10**

Ceiling & Floor **28**

Ceiling Concealed Duct **44**

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Introduction

• Models List

Indoor Unit			Model name				Power Supply
			Nominal capacity[(Btu/h(kW)]				
Type	Refrigerant	Chassis name	36,000 (10.6)	42,000 (12.3)	48,000 (14.1)	60,000 (17.6)	
Ceiling Cassette 4-Way	R410A	TD	ATNH366DLFC	ATNH426DLFC	ATNH486DLFC	ATNH606DLFC	1Ø, 220-240V, 50Hz
Ceiling Suspended	R410A	VK	AVNH366KLA1 AVNH366KLAC	-	-	-	
		VL	-	AVNH426LLFC	AVNH486LLFC	AVNH606LLFC	
Ceiling Concealed Duct	R410A	BG	ABNH366GLAC	-	-	-	
		BR	-	ABNH426RLAC	ABNH486RLAC	ABNH606RLAC	

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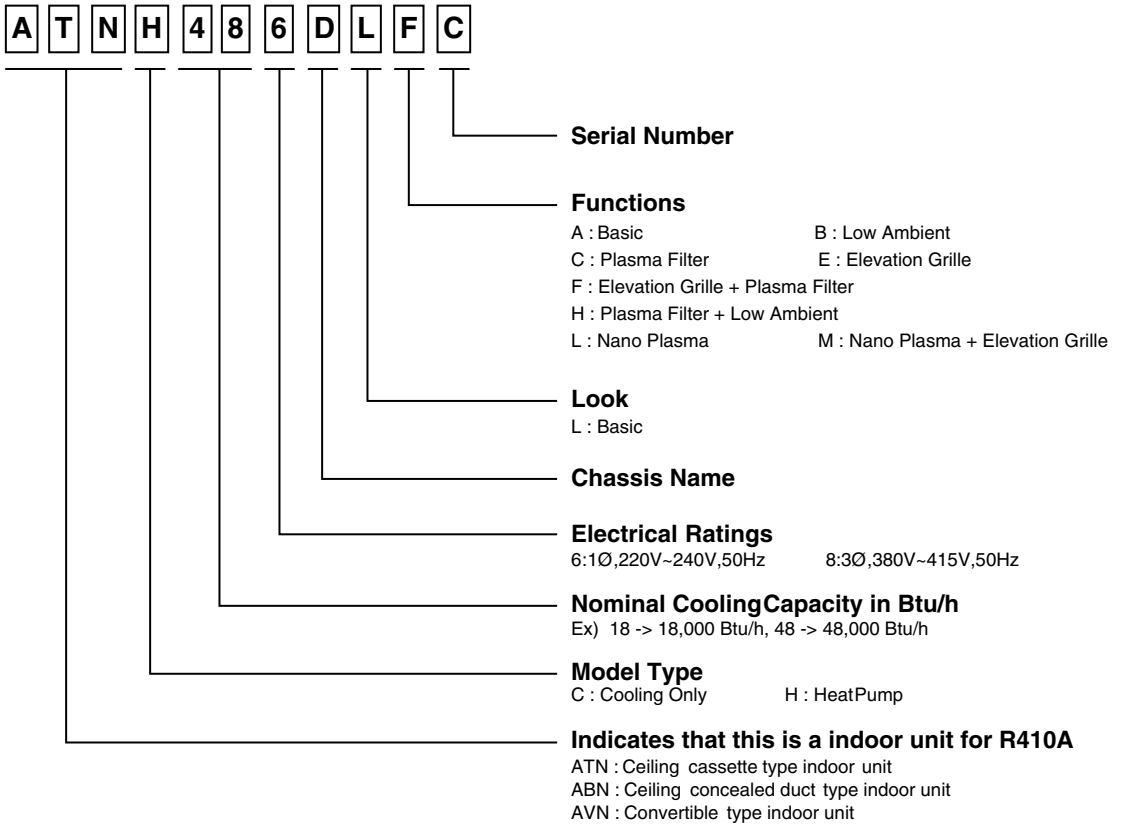
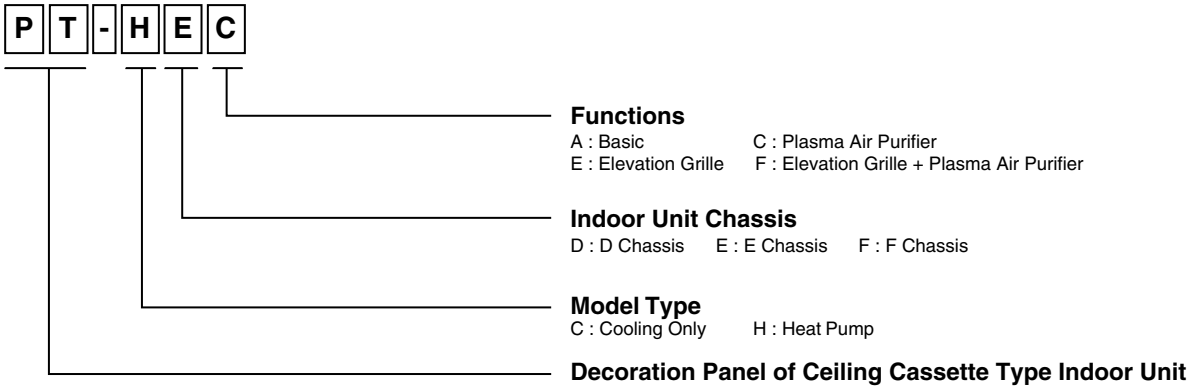
• Model Number Nomenclature

Indoor unit


A T N H 4 8 6 D L F C
Serial Number
Functions
A : Basic
B : Low Ambient
C : Plasma Filter
E : Elevation Grille
F : Elevation Grille + Plasma Filter
H : Plasma Filter + Low Ambient
L : Nano Plasma
M : Nano Plasma + Elevation Grille
Look
L : Basic
Chassis Name
Electrical Ratings
6:1Ø,220V~240V,50Hz
8:3Ø,380V~415V,50Hz
Nominal CoolingCapacity in Btu/h
Ex) 18 -> 18,000 Btu/h, 48 -> 48,000 Btu/h
Model Type
C : Cooling Only
H : HeatPump
Indicates that this is a indoor unit for R410A
ATN : Ceiling cassette type indoor unit
ABN : Ceiling concealed duct type indoor unit
AVN : Convertible type indoor unit

Decoration panel(For Ceiling Cassette Models)


P T - H E C
Functions
A : Basic
C : Plasma Air Purifier
E : Elevation Grille
F : Elevation Grille + Plasma Air Purifier
Indoor Unit Chassis
D : D Chassis
E : E Chassis
F : F Chassis
Model Type
C : Cooling Only
H : Heat Pump
Decoration Panel of Ceiling Cassette Type Indoor Unit

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Ceiling Cassette 4-way

Ceiling Cassette 4-way
(R410A·Indoor Units)

ATNH-DL

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1. Features & Benefits

■ **Easy Installation**

- Compact design & easy installation
- High ceiling corresponding operation
- High head drain pump(700mm)

■ **Comfort & Reliability**

- Low noise with 3-dimensional turbo fan
- 2-Thermistor control(Main body & Remote control)
- Zero stanby power consumption
- Jet cool
- Swirl swing
- Space control

■ **Convenience**

- Auto elevation grille(Accessory)
- Tele control(Optional)
- LCD wired remote control
- Group control
- Central control(Accessory)
- Weekly progam

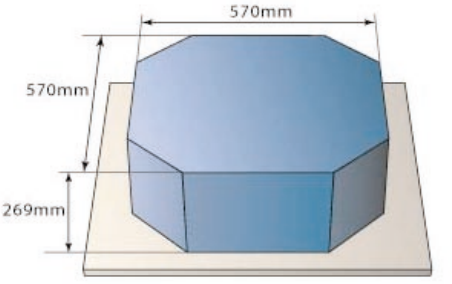
■ **Cleanness**

- Plasma air purifying system
- Hygienic and easy to clean filter

Compact Design and Easy Installation

Only about 269mm height in the ceiling is sufficient for installation space.

A smaller size than a Textile(600X600) is very convenient for installation.

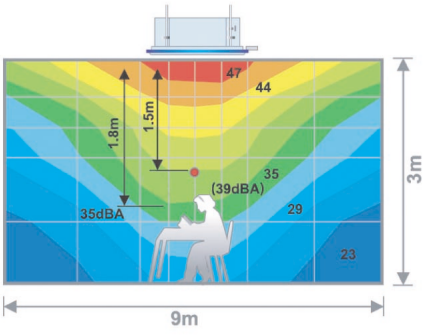


(18k Btu/h model)

Low Noise with 3-dimensional turbo fan

The most advanced low-noise design.

The adoption of turbo-fan and round type heat exchanger provides the quietest operation.



Hygienic and Easy-to-Clean Filter

Washable and anti bacteria filter is adopted.

It is easy to open grille and replace clean filter.

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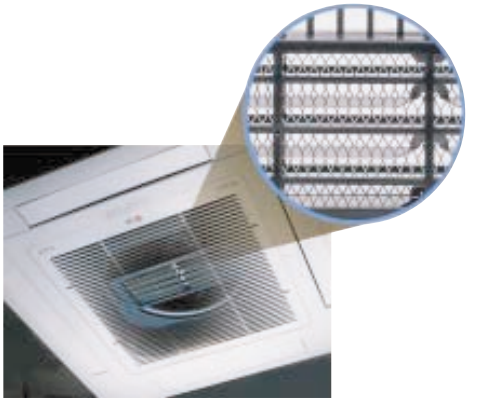
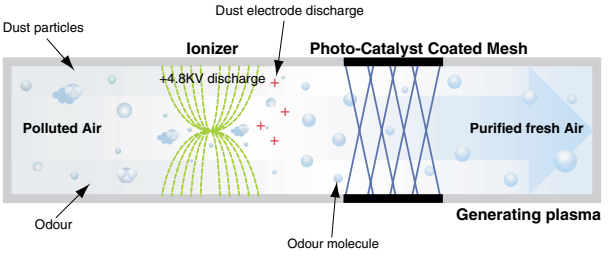
Plasma Air Purifying System

The PLASMA Air Purifying Function not only removes microscopic contaminants and dust, but also removes house mites, pollen, and pet fur helps to prevent allergic diseases like asthma.

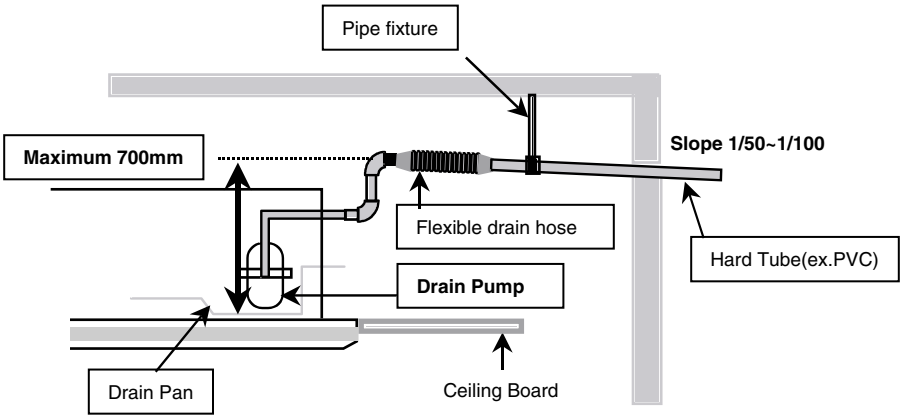




High Head Drain Pump(700mm)

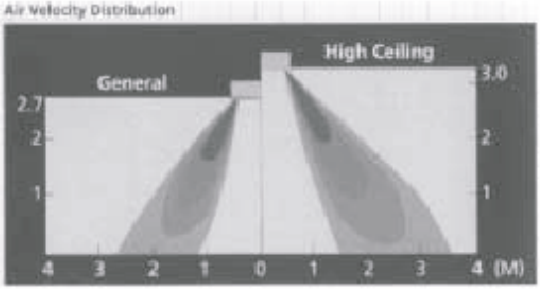
Built-in Drain Pump drains out water automatically.

A standard drain-head height of up to 700 mm is possible, creating the ideal solution for perfect water drainage.



High-Ceiling Corresponding Operation

According to the height of the installation, it provides variability of indoor fan motor rpm. If the height of installation is low then you can adjust low rpm of indoor fan motor. On the other hand if the height of the installation is high you can adjust high rpm of indoor fan motor. Selection of speed can be done by slide switch at the back of the LCD wired remote.



Switch selection	Ceiling Height
Low Ceiling	Less than 2.7m
Standard	2.7~3.3m
High Ceiling	Over than 3.3m

Tele Control (Accessory)

- It provides you ease of control. Air conditioner can be switched on/off by the telephone. It saves time & energy.

In Advance by Telephone Before Coming Home...

In case of Going out Without Turning off the Air Conditioner...

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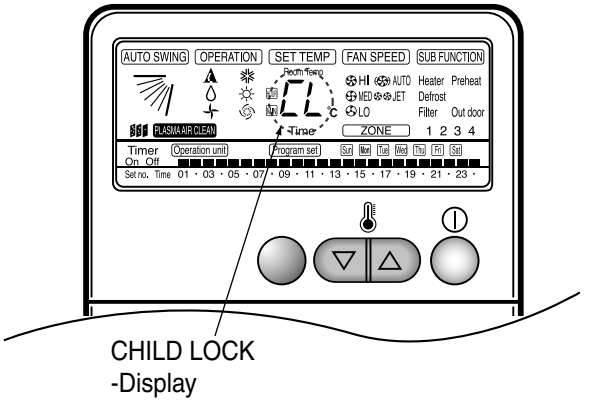
Child Lock Function

-It prevents the children or others from tampering with the control buttons. Unit can be controlled by the wireless remote controller. This can be easily set by pressing timer key & Min key simultaneously. After child lock is set, pressing any key will display CL on the LCD for 3 seconds and all the keys will be ineffective.

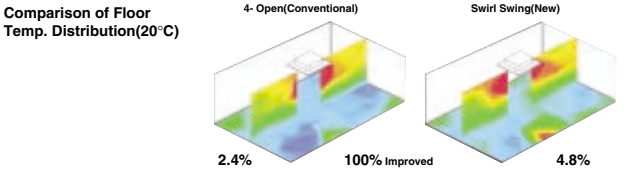


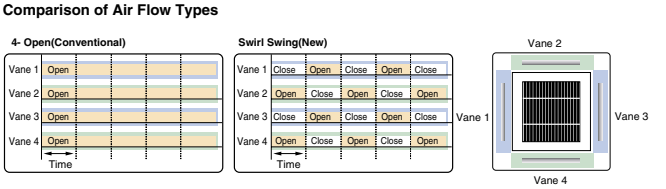
Auto Elevation Grille(Accessory)

-Auto Elevation Grille is automatically down to height of max. 3.1 m. So it enables to install the Indoor unit at high ceiling space. And Auto Elevation Grille makes you cleaning the filter easily.

Swirl Swing

- It is the function for comfort cooling/heating operation.
- The diagonal two louvers are opened the more larger than the other louvers. After one minute, it is opposite.

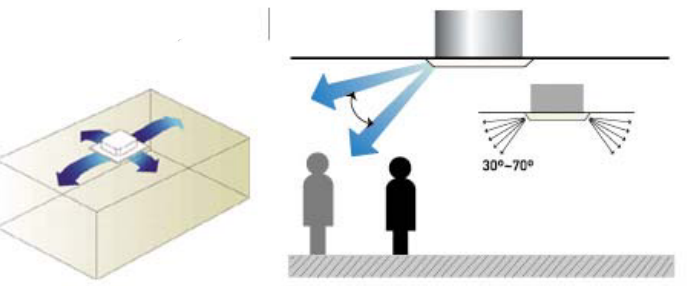




Space Control

Vanes angle can be controlled by pair, considering its installation environment.

- For example direct drafts can be annoying, leading to discomfort and reduced productivity vane control helps to eliminate this problem.
- Easily controlled by wired remote control.
- Air Flow can be controlled easily regarding any space environment.



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Weekly Program

- On/Off schedule of operation for a period of ONE week.
  No need to turn the unit On/OFF manually during working days. On/Off time is scheduled in micom of the wired remote control.

Operation Time Table (Example)

Setting	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Temp.	25°C	25°C	25°C	25°C	25°C	OFF	
On	09:00	08:00	09:00	08:00	09:00		
Off	12:00	17:00	12:00	12:00	12:00		

Auto Restart Operation

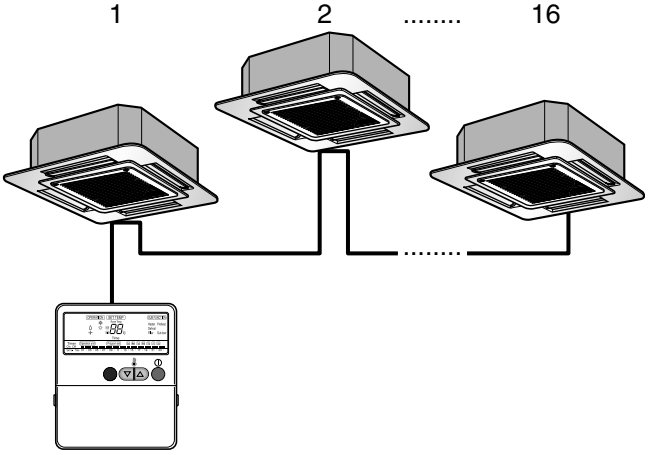
- Whenever there is electricity failure to the unit, and after resumption of the power, unit will start in the same mode prior to the power failure. Memorized condition are on / off condition, operating mode (cooling/heating), set temperature and fan speed.The unit will memorize the above conditions and start with same memorized condition.

Two Thermistor Control

- There may be a significant difference between the temperature taken at the installed product and indoor temperature. Two thermistor control provides option to control temperature by referring any of the two temperatures. With the help of the slide switch at the back of the LCD wired remote controller, selection of the desired thermistor for controlling the unit can be done. One thermistor is in the Indoor unit & the other one is in the LCD wired remote.

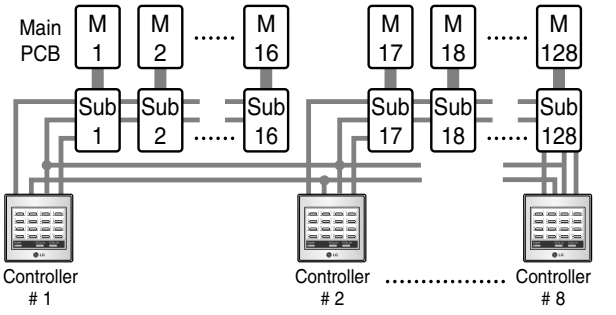
Group Control

- It enables to control as much as 16 units with the help of one wired remote controller. All the units will follow same setting of temperature & other sub functions.



Central Control(Accessory)

- It enables to control 16 x 8 = 128 units with the help of 8 controllers. All units can be put on and off from one Central Room.For Setting Temperature, Fan Speed and other sub functions, access the respective LCD wired remote controller of each unit.
  ❉ Sub PI485(with wire assembly) should be purchased as optional.



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2. List of Functions

Category	Function	ATNH366DLFC [UT36 NDC]	ATNH426DLFC [UT42 NDC]	ATNH486DLFC [UT48 NDC]	ATNH606DLFC [UT60 NDC]
Air flow	Air supply outlet	4	4	4	4
	Airflow direction control (left & right)	-	-	-	-
	Airflow direction control (up & down)	Auto	Auto	Auto	Auto
	Auto swing (left & right)	X	X	X	X
	Auto swing (up & down)	O	O	O	O
	Airflow steps(Fan / Cool / Heat)	3/4/3	3/4/3	3/4/3	3/4/3
	CHAOS swing	X	X		
	CHAOS wind (Auto wind)	-	-	-	-
	Jet cool (Power wind)	O	O	O	O
	Swirl wind	O	O	O	O
Air purifying	Deodorizing filter	-	-	-	-
	Plasma air purifier	O	O	O	O
	Prefilter(Washable / Anti-fungus)	O	O	O	O
Installation	Drain pump	O	O	O	O
	E.S.P. control	-	-	-	-
	Electric heater (Operation)	-	-	-	-
	High ceiling operation	O	O	O	O
Reliability	Hot start	O	O	O	O
	Self diagnosis	O	O	O	O
	Soft dry operation	O	O	O	O
Convenience	Auto changeover	O	O	O	O
	Auto cleaning	X	X	X	X
	Auto operation(Artificial intelligence)	X	X	X	X
	Auto restart operation	O	O	O	O
	Child lock	O	O	O	O
	Forced operation	O	O	O	O
	Group control	O	O	O	O
	Sleep mode	X	X	X	X
	Timer (On/Off)	O	O	O	O
	Timer (weekly)	O	O	O	O
	Two thermistor control	O	O	O	O
Individual control	Standard wired remote controller	O	O	O	O
	Deluxe wired remote controller	X	X	X	X
	Simple wired remote controller	X	X	X	X
	Wired remote controller(for hotel use)	X	X	X	X
	Wireless remote controller(simple)	AHWRHD	AHWRHD	AHWRHD	AHWRHD
	Wireless LCD remote controller	X	X	X	X
CAC network function	General central control(Non LGAP)	X	X	X	X
	Dry contact	PQDSB	PQDSB	PQDSB	PQDSB
	Simple central control(LGAP)	O	O	O	O
	PDI(Power Distribution Indicator)	PQNUD1S00	PQNUD1S00	PQNUD1S00	PQNUD1S00
	PI485	PMNFP14A0	PMNFP14A0	PMNFP14A0	PMNFP14A0
Special function kit	CTIE	X	X	X	X
	Zone control	X	X	X	X
Others	Thermistor	AQTTA	AQTTA	AQTTA	AQTTA

Note: Group control is not available for 4 way cassette which is connected with synchro models.
Sleep mode is available only in case of using wireless remote controller.
- O: Applied, • X: Not applied, • - : No relation,
- Option: Model name & price are different according to options, and assembled in factory with main unit.
- Accessory: Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

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3. Specifications

Indoor unit type			Ceilling Cassette - 4way			
Model			ATNH366DLFC [UT36 NDC]	ATNH426DLFC [UT42 NDC]	ATNH486DLFC [UT48 NDC]	ATNH606DLFC [UT60 NDC]
Power Supply		Ø/V/Hz	1 / 220 ~240 / 50	1 / 220 ~240 / 50	1 / 220 ~240 / 50	1 / 220 ~240 / 50
Cooling Capacity		kW	9.5	11.9	12.9	14.2
		Btu/h	32,500	40,500	44,000	48,500
Heating Capacity		kW	10.8	13.3	14.5	15.9
		Btu/h	37,000	45,500	49,500	54,500
Current	Nominal running current	A	0.76	1.2	1.5	1.8
Fan	Motor Type		Induction	Induction	Induction	Induction
	Fan Type		Turbo Fan	Turbo Fan	Turbo Fan	Turbo Fan
	Motor Output x Number of Unit		52.5*1	55*1	58.5*1	107*1
	Air Flow Rate	cmm	25 / 23 / 21	29 / 26 / 23	30 / 28 / 26	34 / 32 / 30
	(H/M/L)	cfm	883 / 812 / 742	1023 / 918 / 812	1059 /988 / 918	1200 / 1130 / 1059
	Capacitor	µF/Vac	4/440	6/400	6/400	6/400
	Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive
Coil	Row x Column x FPI	mm	2R x 12C x 21	2R x 12C x 21	2R x 12C x 21	2R x 12C x 21
Dimensions	Body	mm(inch)	840*288*840(33.1*11.3*33.1)	840*288*840(33.1*11.3*33.1)	840*288*840(33.1*11.3*33.1)	840*288*840(33.1*11.3*33.1)
(WxHxD)	Decorative Panel	mm	950*30*950(37.4*1.2 *37.4)	950*30*950(37.4*1.2 *37.4)	950*30*950(37.4*1.2 *37.4)	950*30*950(37.4*1.2 *37.4)
Weight	Body	kg(lbs)	32(70.4)	32(70.4)	32(70.4)	32(70.4)
	Decorative Panel	kg(lbs)	5(11)	5(11)	5(11)	5(11)
Air Filter			Long life filter	Long life filter	Long life filter	Long life filter
Sound Level (H/M/L)		dB(A)+3	40 / 38 / 36	42 / 40 / 38	43 / 41 / 39	50 / 47 / 43
Piping	Liquid	mm(inch)	6.35 (1/4)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
Connections	Gas	mm(inch)	15.88(5/8)	19.05(3/4)	19.05(3/4)	19.05(3/4)
	Drain(OD/ID)	mm	32 / 25	32 / 25	32 / 25	32 / 25
Dehumidification Rate		l/h	4	4.5	5.5	6.5
Safety devices			Fuse, Thermal protector for fan motor			
Temperature Sensor			Thermistor	Thermistor	Thermistor	Thermistor
Referigerant			R-410A	R-410A	R-410A	R-410A
Referigerant Control			LEV	LEV	LEV	LEV
Connectable outdoor unit			Single A	Single A	Single A	Single A
Power and transmission interunit cable		No.x mm²	4*0.75	4*0.75	4*0.75	4*0.75

Note :

1. Capacities are based on the following conditions:
   Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
   - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
   Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
   - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
   Piping Length - Interconnecting Piping Length 7.5m
   - Level Difference of Zero.
2. Cooling/heating capacity of indoor unit can be different when it is connected to other type outdoor.

Conversion Formula	
kW	= Btu/h × 0.0002931
kcal/h	= Btu/h × 0.252
CFM	= CMM × 35.3

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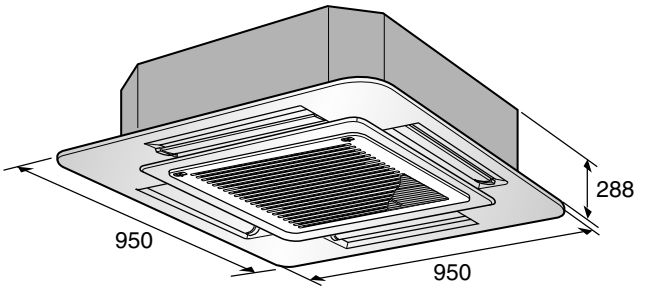
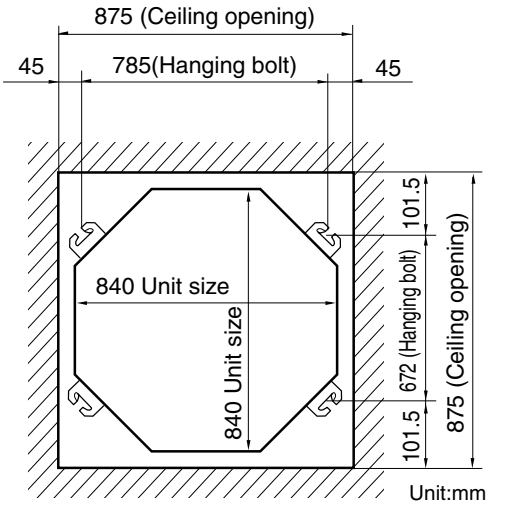
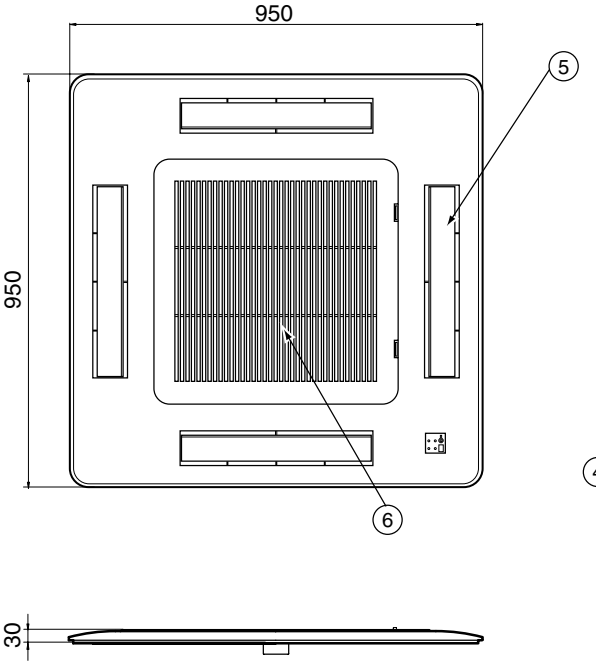
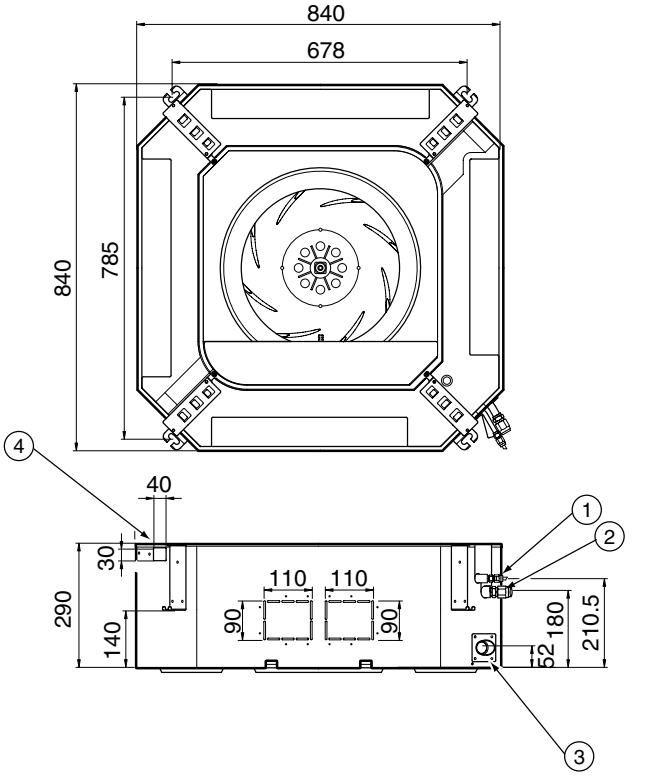
4. Dimensional Drawings

ATNH-DL









(unit : mm)

Number	Name	Descripition
1	Liquid pipe connection	36k:ø6.35, 42/48/60k: ø9.52 flare
2	Gas pipe connection	36k:ø15.88, 42/48/60k: ø19.05flare
3	Drain pipe connection	
4	Power supply connection	
5	Air discharge grille	
6	Air suction grille	

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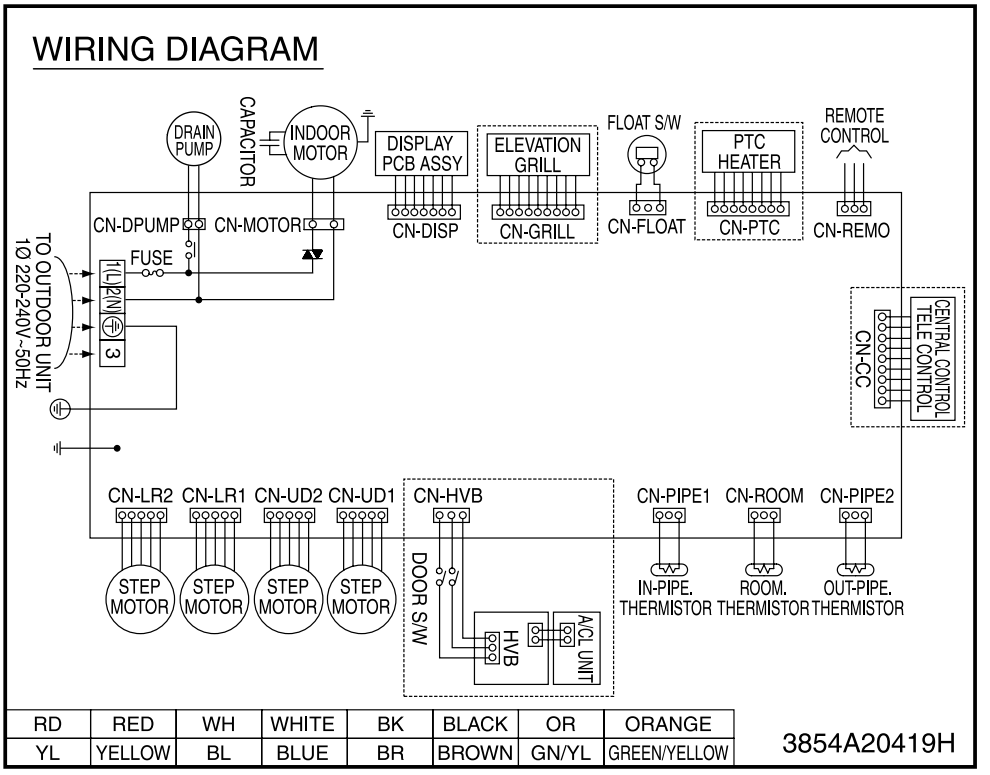
5. Wiring Diagrams



CONNECTOR NUMBER	LOCATION
CN-POWER	AC POWER SUPPLY
CN-MOTOR	BLDC FAN MOTOR OUTPUT
CN-D/PUMP	DRAIN PUMP OUTPUT
CN-DISP	DISPLAY
CN-FLOAT	FLOAT SWITCH INPUT
CN-PTC	PTC HEATER INUT
CN-REMO	REMOTE CONTROL
CN-GRILL	GRILL CONTROL
CN-CC	CENTRAL CONTROL
CN-PIPE2	DISCHARGE PIPE SENSOR
CN-ROOM	ROOM SENSOR
CN-PIPE1	PIPE SENSOR
CN-HVB	AIR CLEANER
CN-UD1	STEP MOTOR
CN-UD2	STEP MOTOR
CN-LR1	STEP MOTOR
CN-LR2	STEP MOTOR

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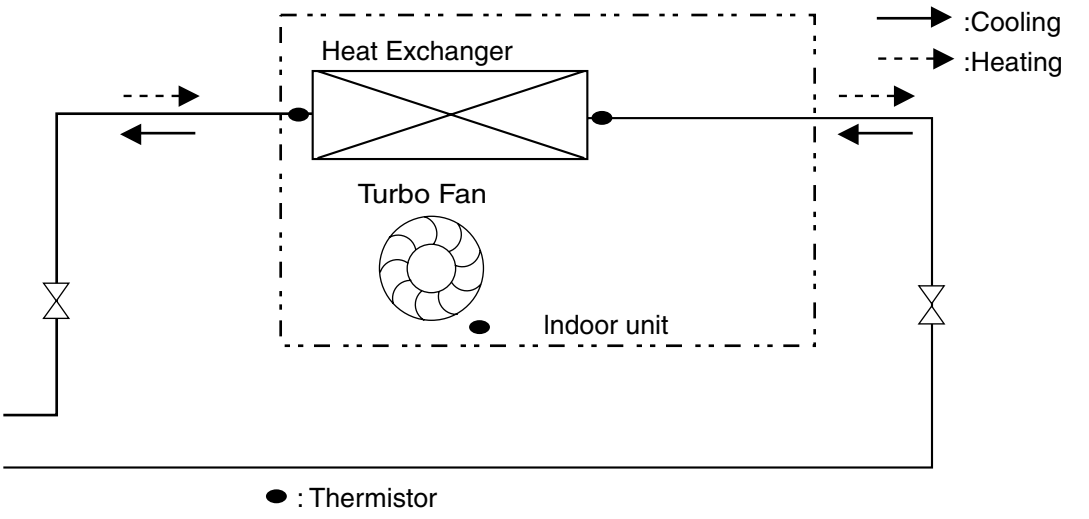
6. Piping Diagrams



Refrigerant pipe connection port diameter

[unit: mm(inch)]

Model	Gas	Liquid
ATNH366DLFC	15.88(5/8)	6.35(1/4)
ATNH426DLFC	19.05(3/4)	9.52(3/8)
ATNH486DLFC		
ATNH606DLFC		

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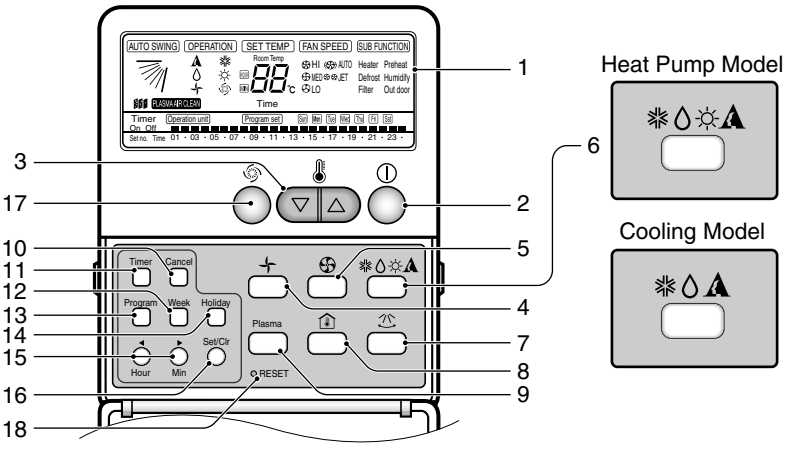
7. Operating Instructions

■ Name and Function of Remote Controller



1. Operation display
Displays the operation conditions.

2. On/Off Button
Operation starts when this button is pressed, and stops when the button is pressed again.

3. Set Temperature Button
Used to set the temperature when the desired temperature is obtained.

4. FAN Operation Button
Used to circulate room air without cooling or heating.

5. Fan Speed (Jet Cool Button: 4 way)
Used to set the desired fan speed or select Jet cool mode.

6. Operation Mode Selection Button
Used to select the operation mode.
- Auto Operation Mode
- Cooling Operation Mode
- Soft Dry Operation Mode
- Heating Operation Mode(except cooling model)

7. Auto Swing Button
Used to swing up and down.

8. Room Temperature Checking Button
Used to check the room temperature.

9. Plasma Air Clean Button (optional)

10. Timer Cancel Button
Used to cancel the timer.

11. Timer Set Button
Used to set the timer when the desired time is obtained.

12. Week Button
Used to set a day of the week.

13. Program Button
Used to set the weekly timer.

14. Holiday Button
Used to set a holiday of the week.

15. Time Set Button
Used to set the time of the day and change the time in the weekly timer Function.

16. Set and Clear Button
Used to set and clear the weekly timer.

17. Swirl Button (4 way)
Used to select swirl mode.
Jet Cool Button (1 way)

18. Reset Button
Used to set the current time and clear the setting time.

❊ Display temperature can be different from actual room temperature if the remote controller is installed at the place where sun-rays are falling directly or the place nearby heat source.

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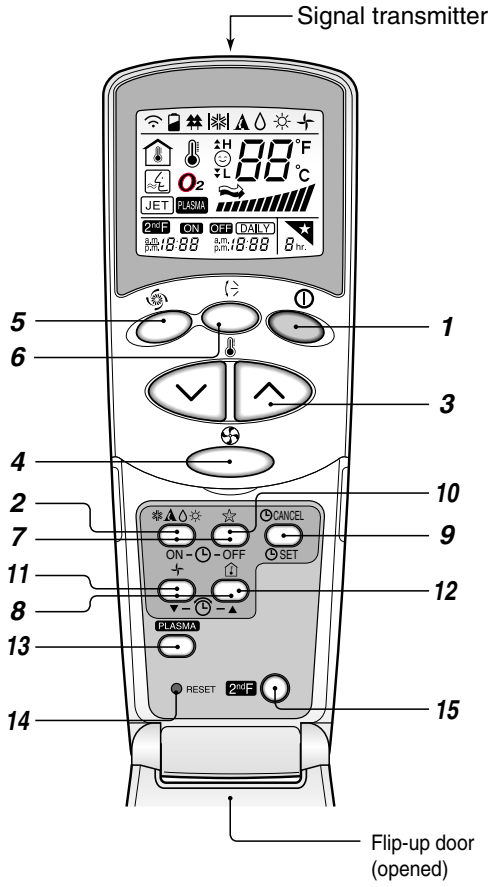
■ Wireless Remote Controller (optional)

This air-conditioner is equipped with wired remote controller basically. But if you want to be available with wireless remote controller, you pay for it.



❊ The wireless remote controller do not operate the swirl mode.

1. START/STOP BUTTON
Operation starts when this button is pressed and stops when the button is pressed again.

2. OPERATION MODE SELECTION BUTTON
Used to select the operation mode.

3. ROOM TEMPERATURE SETTING BUTTONS
Used to select the room temperature.

4. INDOOR FAN SPEED SELECTOR
Used to select fan speed in four steps low, medium, high and CHAOS.

5. JET COOL
Used to start or stop the speed cooling/heating. (Speed cooling/heating operates super high fan speed.)

6. CHAOS SWING BUTTON
Used to stop or start louver movement and set the desired up/down airflow direction.

7. ON/OFF TIMER BUTTONS
Used to set the time of starting and stopping operation.

8. TIME SETTING BUTTONS
Used to adjust the time.

9. TIMER SET/CANCEL BUTTON
Used to set the timer when the desired time is obtained and to cancel the Timer operation.

10. SLEEP MODE AUTO BUTTON
Used to set Sleep Mode Auto operation.

11. AIR CIRCULATION BUTTON
Used to circulate the room air without cooling or heating.

12. ROOM TEMPERATURE CHECKING BUTTON
Used to check the room temperature.

13. PLASMA(OPTIONAL)
Used to start or stop the plasma-purification function.

14. RESET BUTTON
Initialize remote controller.

15. 2nd F Button
Used prior to using modes printed in blue at the bottom of buttons.

⚠ CAUTION: of handling the Remote Controller

- **Aim at the signal receiver on the wired remote controller so as to operate.**
- **The remote control signal can be received at a distance of up to about 7m.**
- **Be sure that there are no obstructions between the remote controller and the signal receptor.**
- **Do not drop or throw the remote controller.**
- **Do not place the remote controller in a location exposed to direct sunlight, or near the heating unit, or any other heat source.**
- **Block a strong light over the signal receptor with a curtain or etc. so as to prevent the abnormal operation. (ex:electronic quick start, ELBA, inverter type fluorescent lamp)**

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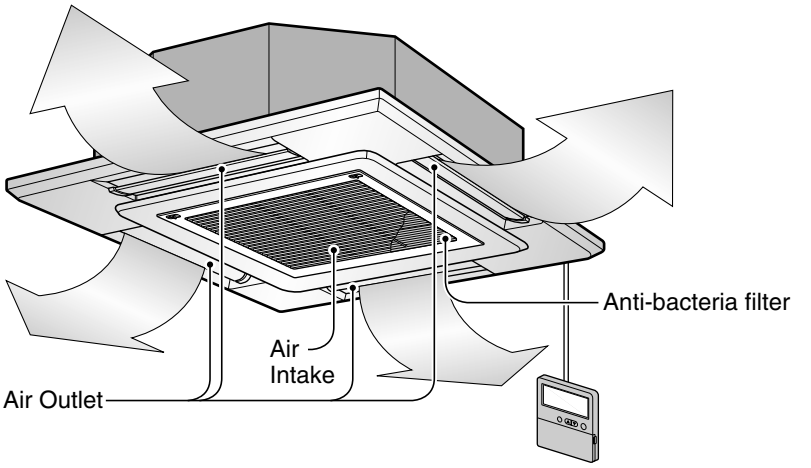
8. Installation

- Please read this instruction sheet completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



Required Parts

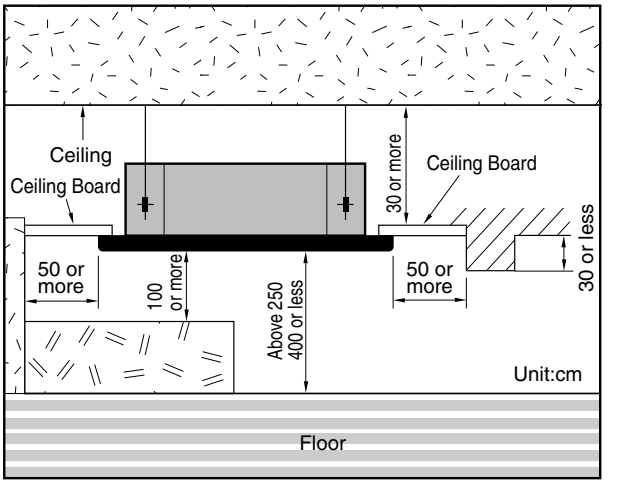
- Connecting cable
- Pipes: Gas side
  Liquid side
- Hanging Bolt
  (W 3/8 or M10 length 650mm)
- Insulated drain hose
- Additional Drain hose
  (Inner Diameter .....32mm)

Required Tools

- Level
- Screw driver
- Electric drill
- Hole core drill (ø70mm)
- Flaring Tools set
- Torque Wrenches
- Hexagonal Wrench (4mm, 5mm)
- Gas-leak detector
- Owner's Manual
- Thermometer

8.1 Selection of the best location

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to the air circulation.
- There should be provision of easy condensate drain.
- Taking into accounting the noise prevention criteria, spot the installation location.
- Do not install the unit near the door way.
- Keep proper distances, of the unit, from ceiling, fence, floor, walls and other obstacles as shown in figure.
- The indoor unit must have the maintenance space.



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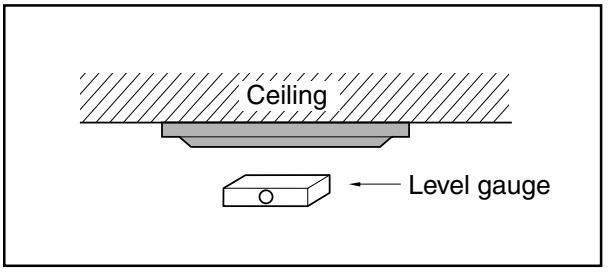
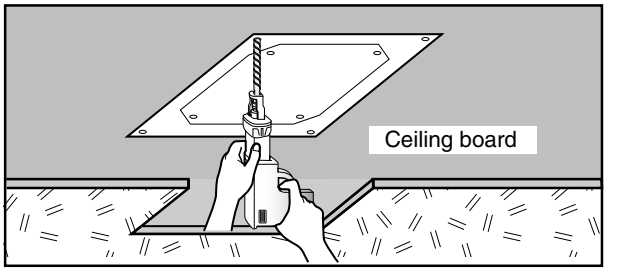
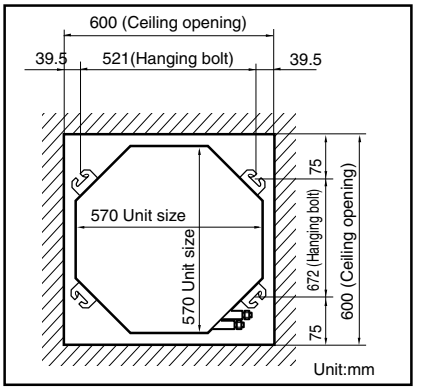
8.2 Ceiling opening dimensions and hanging bolt location

• The dimensions of the paper pattern for installation are the same as those of the ceiling opening dimensions.

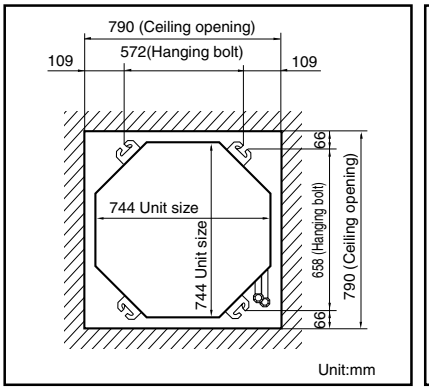




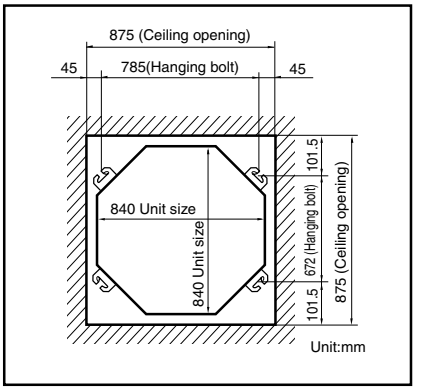
TE Model



TF Model



TD Model



⚠ CAUTION

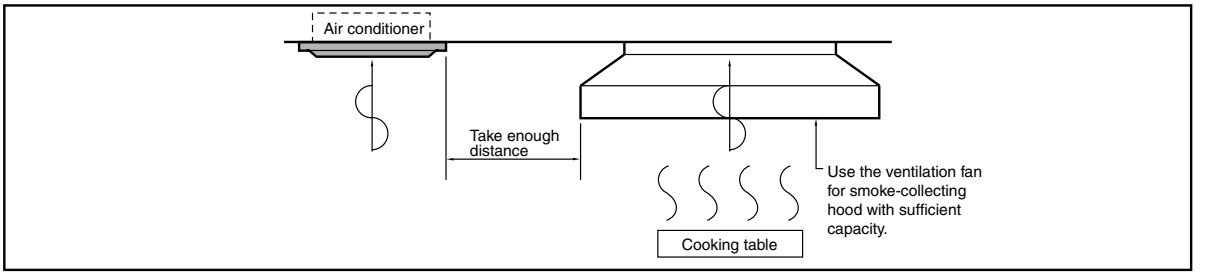
- This air-conditioner uses a drain pump.
- Install the unit horizontally using a level gauge.
- During the installation, care should be taken not to damage electric wires.

- Select and mark the position for fixing bolts and piping hole.
- Decide the position for fixing bolts slightly tilted to the drain direction after considering the direction of drain hose.
- Drill the hole for anchor bolt on the wall.

NOTE:

• Avoid the following installation location.

1. Such places as restaurants and kitchen where considerable amount of oil steam and flour is generated.
   These may cause heat exchange efficiency reduction, or water drops, drain pump mal-function.
   In these cases, take the following actions;
   • Make sure that ventilation fan is enough to cover all noxious gases from this place.
   • Ensure enough distance from the cooking room to install the air conditioner in such a place where it may not suck oily steam.


Air conditioner
Take enough distance
Use the ventilation fan for smoke-collecting hood with sufficient capacity.
Cooking table

2. Avoid installng air conditioner in such places where cooking oil or iron powder is generated.
3. Avoid places where inflammable gas is generated.
4. Avoid place where noxious gas is generated.
5. Avoid places near high frequency generators.

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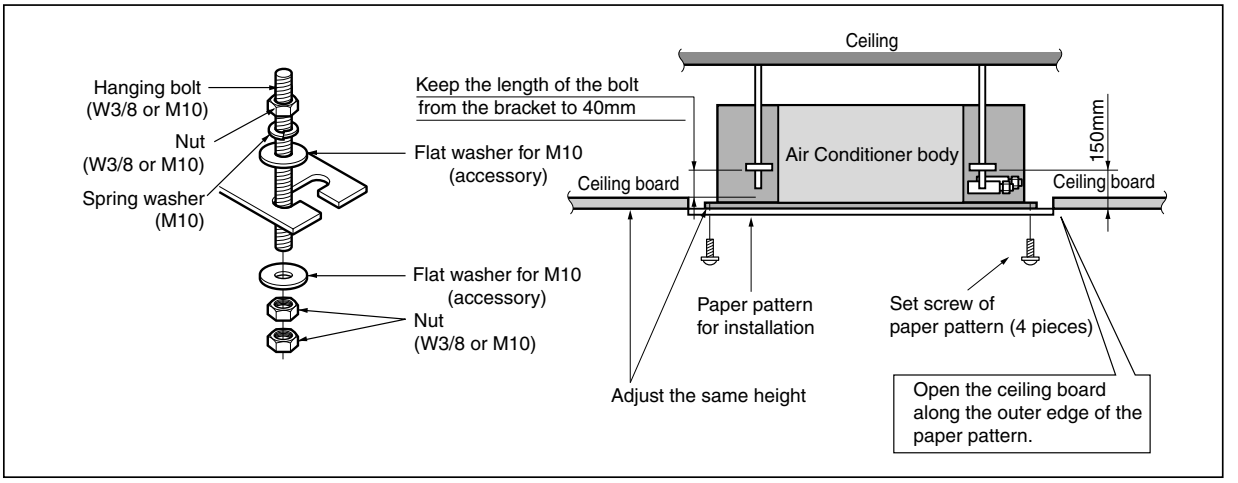


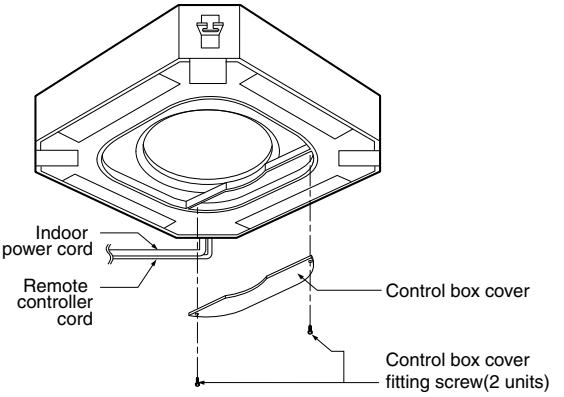
• The following parts are local purchasing.
① Hanging Bolt - W 3/8 or M10
② Nut - W 3/8 or M10
③ Spring Washer - M10
④ Plate Washer - M10

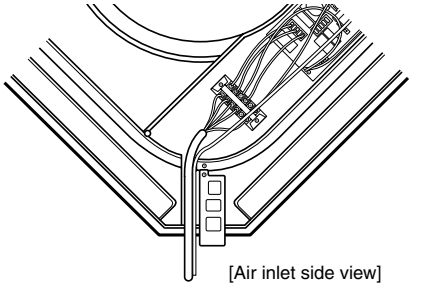
⚠ CAUTION

• Tighten the nut and bolt to prevent unit from falling off.

8.3 Wiring Connection

• Open the control box cover and connect the remote control cord and Indoor power wires.





Terminal Block in Indoor				
1(L)	2(N)	⏚	3	4

Connected to outdoor unit

⚠ WARNING

Make sure that the screws of the terminal are free from looseness.

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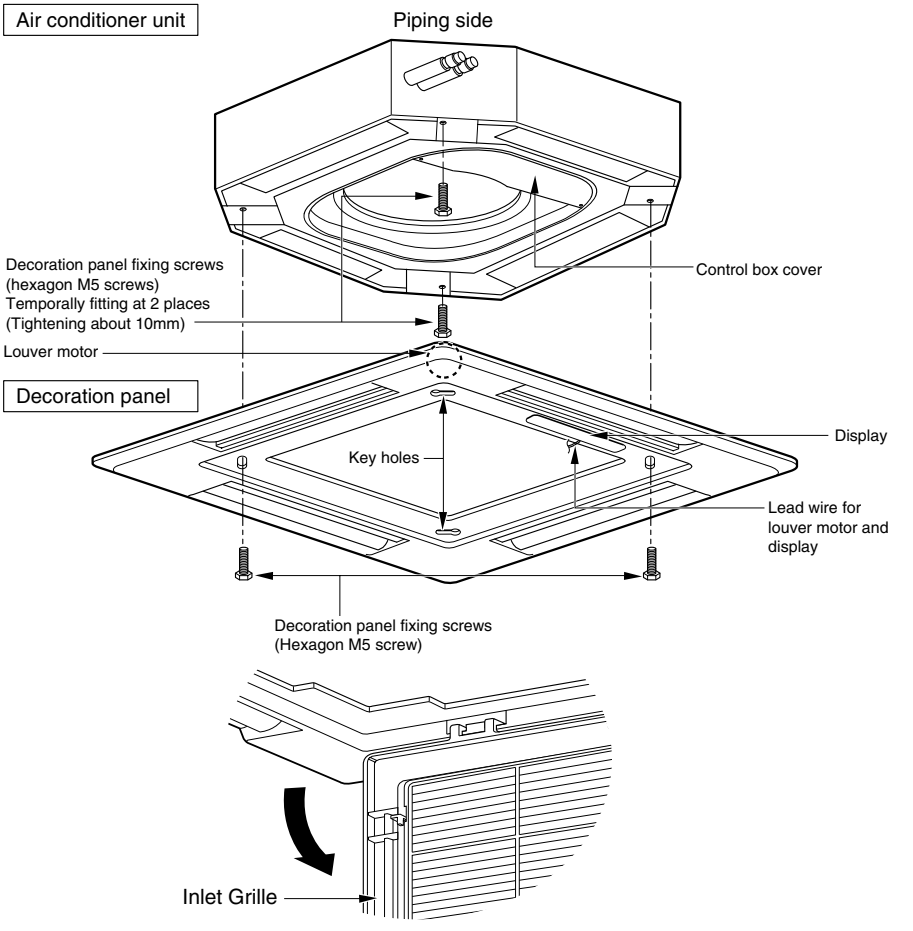
8.4 Installation of Decoration Panel

The decoration panel has its installation direction.

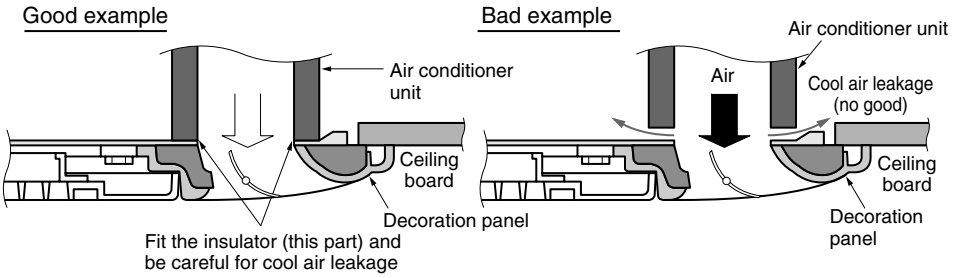
Before installing the decoration panel, always remove the paper template.

1. Temporarily fix two decoration panel fixing screws (hexagon M5 screw) on the unit body. (Tighten by amount 10mm in length.)
   The fixing screws (hexagon M5 screw) are included the indoor unit box.
2. Remove the air inlet grille from the decoration panel. (Remove the hook for the air inlet grille cord.)
3. Hook the decoration panel key hole (⊂⊃) on the screws fixed in step above, and slide the panel so that the screws reach the key hole edge.
4. Retighten completely two temporarily fixed screws and other two screws. (Total 4 screws)
5. Connect the louver motor connector and display connector.
6. After tightening these screws, install the air inlet grille (including the air filter).



⚠ CAUTION

Install certainly the decoration panel.
Cool air leakage causes sweating.
⇨ Water drops fall.



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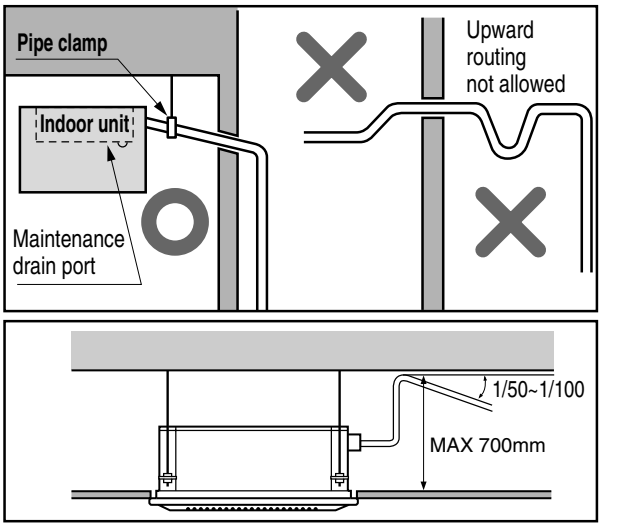
8.5 Indoor Unit Drain Piping

- Drain piping must have down-slope (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- The outside diameter of the drain connection on the indoor unit is 32mm.

Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings

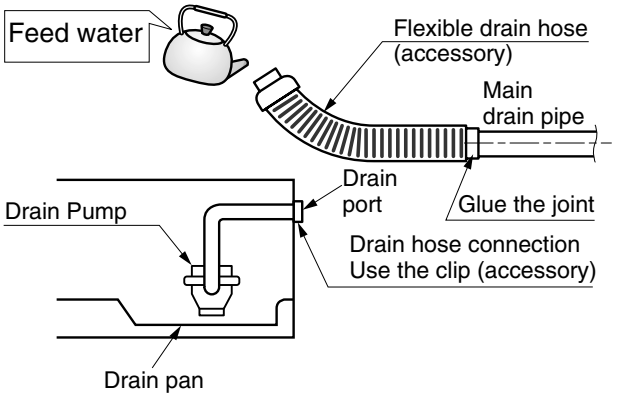
- Be sure to install heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm.

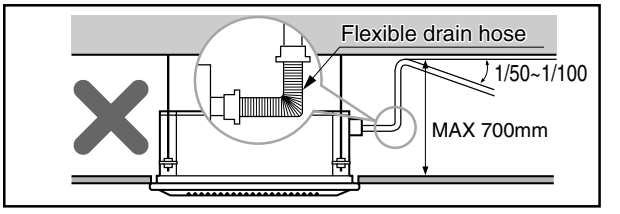


Drain test

The air conditioner uses a drain pump to drain water.
Use the following procedure to test the drain pump operation:



- Connect the main drain pipe to the exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain pump for normal operating and noise when electrical wiring is complete.
- When the test is complete, connect the flexible drain hose to the drain port on the indoor unit.



⚠ CAUTION

The supplied flexible drain hose should not be curved, neither screwed. The curved or screwed hose may cause a leakage of water.

⚠ CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

1) Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.
2) Provide a circuit breaker switch between power source and the unit.
3) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could give rise to burn-out of the wires.)
4) Specification of power source
5) Confirm that electrical capacity is sufficient.
6) Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
7) Confirm that the cable thickness is as specified in the power sources specification.
(Particularly note the relation between cable length and thickness.)
8) Never fail to equip a leakage breaker where it is wet or moist.
9) The following troubles would be caused by voltage drop-down.
- Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.
- Proper starting power is not given to the compressor.

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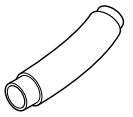
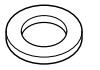
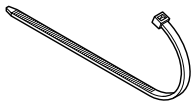
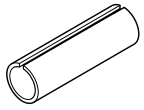
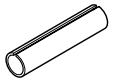
9. Accessories

Standard Accessories

Name	Drain hose	Clamp metal	Washer for hanging backet	Clamp	Insulation for fitting	(Other)
Quantity	1 EA	1 EA	8 EA	8 EA	1 SET	
Shape					 for gas pipe  for liquid pipe	• Paper pattern for installation • Owner's manual • Installation manual

Optional Accessories(For Unit)

No.	Item	Type	Model No.	Component Parts
1	Wireless remote control	With air purifying function	AHWRHD	• Wireless remote control : 1EA • Holder : 1EA • Battery : 2EA • Screw : 2EA
2	Central control	Simple	PQCSA101S0	• Central control • Installation manual
3	PI485 Gateway	For central control	PHNFP14A0	• PCB: 1EA • Installation manual • Wire assembly

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Ceiling suspended

Ceiling suspended
(R410A·Indoor Units)

AVNH-KL/LL

Contents

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9. Accessories 43

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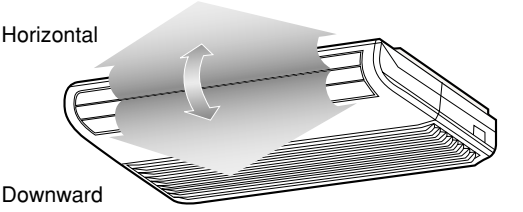
1. Features & Benefits

Natural CHAOS wind

- **It swings at an angle, thus minimizing the difference in indoor temperatures and allowing air in every corner of the room.**

Auto air flow direction (up&down)

- The air flow direction can be adjusted as desired by using the remote controller.
- This is effective when you want to cool yourself directly



One-touch air filter & filter chage alarm function

- Easily change air filter when it is dirty.

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2. List of Functions

Category	Function	AVNH366KLAC[UV36 NKC] AVNH366KLA1(UV36 E)	AVNH426LLAC [UV42 NLC]	AVNH486LLAC [UV48 NLC]	AVNH606LLAC [UV60 NLC]
Air flow	Air supply outlet	1	1	1	1
	Airflow direction control (left & right)	Manual	Manual	Manual	Manual
	Airflow direction control (up & down)	Auto	Auto	Auto	Auto
	Auto swing (left & right)	-	-	-	-
	Auto swing (up & down)	O	O	O	O
	Airflow steps(Fan / Cool / Heat)	3 / 4 / 3	3 / 4 / 3	3 / 4 / 3	3 / 4 / 3
	CHAOS swing(Wall mounted / Artcool)	X	X	X	X
	CHAOS wind (Auto wind)	O	O	O	O
	Jet cool (Power wind)	O	O	O	O
	Swirl wind	-	-	-	-
Air purifying	Deodorizing filter	O	O	O	O
	Plasma air purifier	-	-	-	-
	Prefilter(Washable / Anti-fungus)	O	O	O	O
Installation	Drain pump	-	-	-	-
	E.S.P. control	-	-	-	-
	Electric heater (Operation)	-	-	-	-
	High ceiling operation	X	X	X	X
Reliability	Hot start	O	O	O	O
	Self diagnosis	O	O	O	O
	Soft dry operation	O	O	O	O
Convenience	Auto changeover	O	O	O	O
	Auto cleaning	-	-	-	-
	Auto operation(Artificial intelligence)	X	X	X	X
	Auto restart operation	O	O	O	O
	Child lock	X	X	X	X
	Forced operation	O	O	O	O
	Group control	X	X	X	X
	Sleep mode	O	O	O	O
	Timer (On/Off)	O	O	O	O
	Timer (weekly)	X	X	X	X
	Two thermistor control	X	X	X	X
Individual control	Standard wired remote controller	PCRCUSZ0	PCRCUSZ0	PCRCUSZ0	PCRCUSZ0
	Deluxe wired remote controller	X	X	X	X
	Simple wired remote controller	X	X	X	X
	Wired remote controller(for hotel use)	X	X	X	X
	Wireless remote controller(simple)	O	O	O	O
	Wireless LCD remote controller	X	X	X	X
CAC network function	General central control(Non LGAP)	X	X	X	X
	Dry contact	PQDSB	PQDSB	PQDSB	PQDSB
	Simple central control(LGAP)	O	O	O	O
	PDI(Power Distribution Indicator)	PQNUD1S00	PQNUD1S00	PQNUD1S00	PQNUD1S00
	PI485	PMNFP14A0	PMNFP14A0	PMNFP14A0	PMNFP14A0
Special function kit	CTIE	X	X	X	X
	Electro thermostat	X	X	X	X
	RF remote controller	X	X	X	X
	Tele controller	X	X	X	X
	Zone control	X	X	X	X
Others	Thermistor	AQTTA	AQTTA	AQTTA	AQTTA

Note: High ceiling operation, child lock, group control, timer (weekly) and two thermistor control can operate only with standard wired remote controller.

- O: Applied, • X: Not applied, • - : No relation,
- Option: Model name & price are different according to options, and assembled in factory with main unit.
- Accessory: Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

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3. Specifications

Indoor unit type			Ceiling suspended				
Model			AVNH366KLAC [UV36 NKC]	AVNH366KLA1 [UV36E]	AVNH426LLAC [UV42 NLC]	AVNH486LLAC [UV48 NLC]	AVNH606LLAC [UV60 NLC]
Power Supply		Ø/V/Hz	1 / 220~240 / 50	1 / 220~240 / 50	1 / 220~240 / 50	/ 220~240 / 50	/ 220~240 / 50
Cooling Capacity		kW	9.5	8.8	11.9	12.9	14.1
		Btu/h	32,500	30,027	40,500	44,000	48,000
Heating Capacity		kW	10.6	10.3	13.2	14.5	15.8
		Btu/h	36000	35,145	45000	49500	54000
Current	Nominal running current	A	0.31	0.31	-	0.31	0.31
Fan	Motor Type		Induction	Induction	Induction	Induction	Induction
	Fan Type		Cross Flow Fan	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
	Motor Output x Number of Unit		63*3	63*3	63*4	63*4	63*4
	Air Flow Rate	cmm	29 / 27 / 24	29 / 27 / 24	32 / 30 / 28	36 / 34 / 32	40 / 38 / 36
	(H/M/L)	cfm	1023 / 953 / 847	1023 / 953 / 847	1136 / 1059 / 989	1271 / 1207 / 1136	1412 / 1341 / 1270
	Capacitor	µF/Vac	4,0 / 440	4,0 / 440	4,0 / 440	4,0 / 440	4,0 / 440
	Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Coil	Row x Column x FPI	mm	3R*14C*19	3R*14C*19	3R*14C*19	3R*14C*19	3R*14C*19
Dimensions (WxHxD)	Body	mm(inch)	1350*630*220 (53.2*24.8*8.66)	1350*630*220 (53.2*24.8*8.66)	1750*630*220 (68.9*24.8*8.66)	1750*630*220 (68.9*24.8*8.66)	1750*630*220 (68.9*24.8*8.66)
Weight	Body	kg(lbs)	35(77.2)	35(77.2)	45(99.2)	45(99.2)	45(99.2)
Air Filter			Long life filter	Long life filter	Long life filter	Long life filter	Long life filter
Sound Level (H/M/L)		dB(A)+3	44 / 42 / 40	44 / 42 / 40	48 / 45 / 42	54 / 52 / 50	56 / 54 / 52
Piping Connections	Liquid	mm(inch)	6.35(1/4)	6.35(1/4)	9.52(3/8)	9.52(3/8)	9.52(3/8)
	Gas	mm(inch)	15.88(5/8)	15.88(5/8)	19.05(3/4)	19.05(3/4)	19.05(3/4)
	Drain(OD/ID)	mm	17	17	17	17	17
Dehumidification Rate		l/h	3.5	3.5	4.5	5.8	6.2
Safety devices			Fuse, Thermal protector for fan motor				
Temperature Sensor			Thermistor	Thermistor	Thermistor	Thermistor	Thermistor
Referigerant			R-410A	R-410A	R-410A	R-410A	R-410A
Referigerant Control			LEV	LEV	LEV	LEV	LEV
Connectable outdoor unit			Single A	Single A	Single A	Single A	Single A
Power and transmission interunit cable		No.* mm^2	4*0.75	4*0.75	4*0.75	4*0.75	4*0.75

Note :

1. Capacities are based on the following conditions:
   Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
   - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
   Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
   - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
   Piping Length - Interconnecting Piping Length 7.5m
   - Level Difference of Zero.
2. Cooling/heating capacity of indoor unit can be different when it is connected to other type outdoor.

Conversion Formula
kW = Btu/h × 0.0002931
kcal/h = Btu/h × 0.252
CFM = CMM × 35.3

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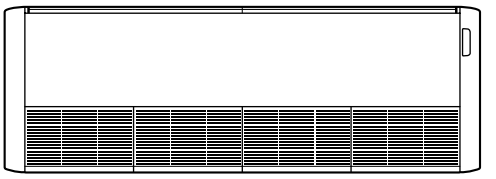
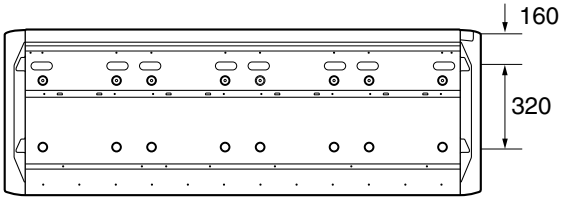
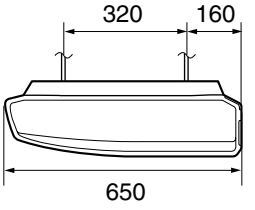
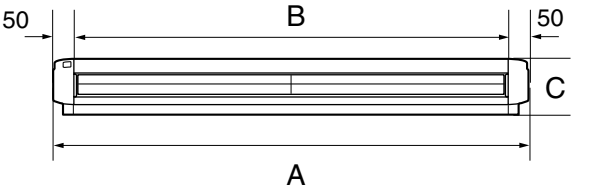
4. Dimensional Drawings

AVNH-KL/LL







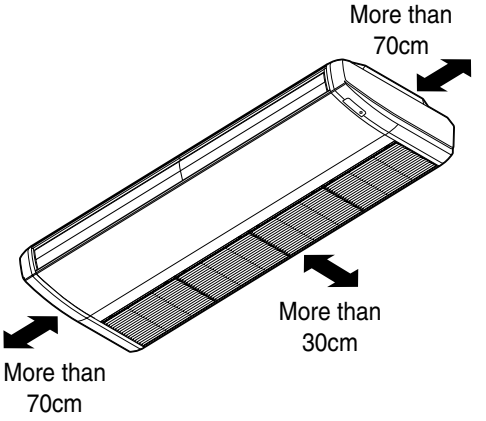


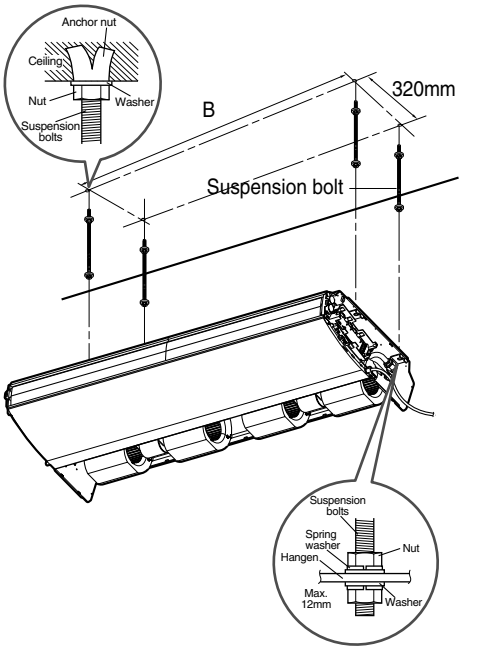
(unit: mm)

Dimension / Chassis	A	B	C
VL Chassis	1750	1655	220
VK Chassis	1350	1255	220

Note:
1. Pipe Specification(mm)

Model	Liquid	Gas
36k	Ø 6.35	Ø 15.88
42k, 48k, 60k	Ø 9.52	Ø 19.05





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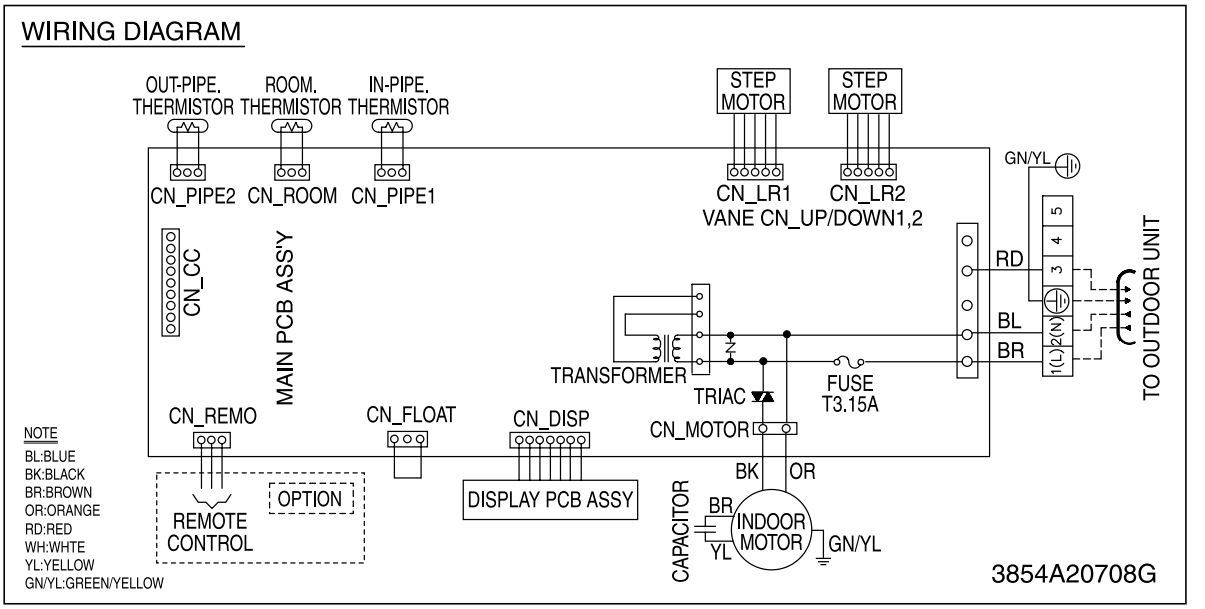
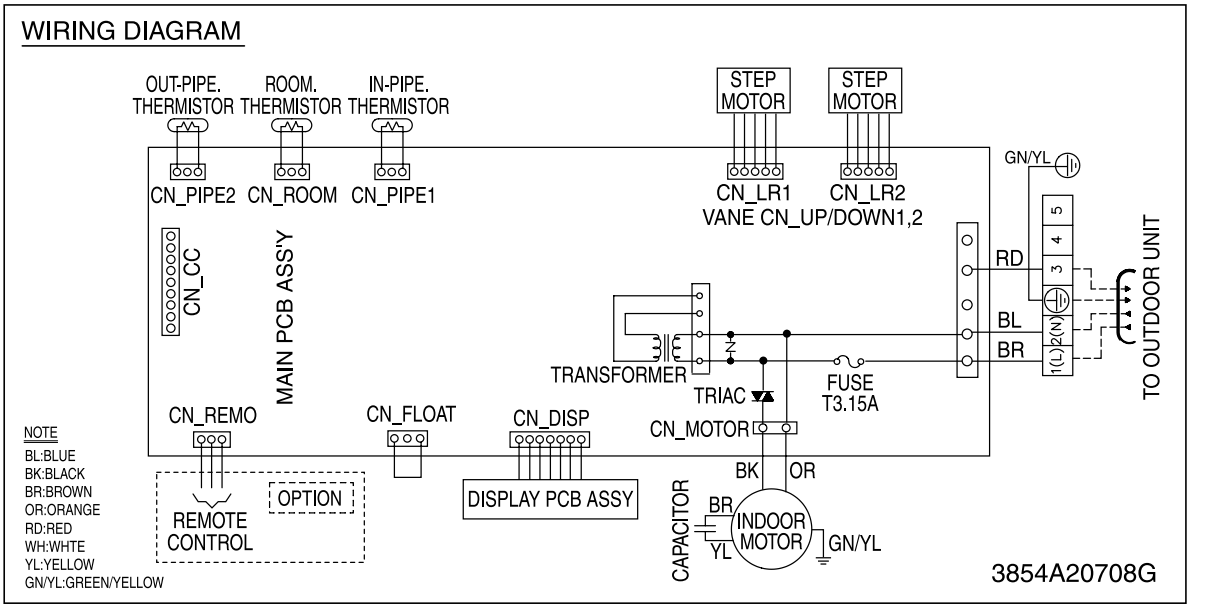
5. Wiring Diagrams

AVNH-KL



AVNH-LL



CONNECTOR NUMBER	LOCATION	CONNECTOR NUMBER	LOCATION
CN-POWER	AC POWER SUPPLY	CN-TH2	DISCHARGE PIPE SENSOR
CN-MOTOR	BLDC FAN MOTOR OUTPUT	CN-TH1	PIPE AND ROOM SENSOR
CN-D/PUMP	DRAIN PUMP OUTPUT	CN-HVB	AIR CLEANER
CN-AC/DC	AC/DC CONNECTION	CN-DOOR	STEP MOTOR
CN-DISPLAY	DISPLAY	CN-U/D1	STEP MOTOR
CN-FLOAT	FLOAT SWITCH INUT	CN-CC	CENTRAL CONTROL

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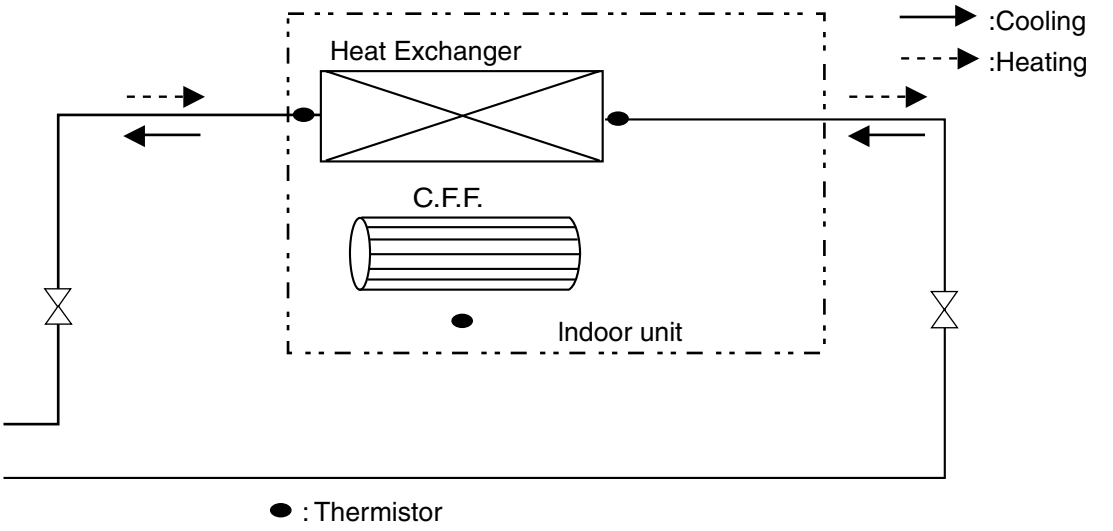
6. Piping Diagrams



Refrigerant pipe connection port diameter

[unit: mm(inch)]

Model	Gas	Liquid
AVNH366KLAC	15.88(5/8)	6.35(1/4)
AVNH366KLA1		
AVNH426LLFC	19.05(3/4)	9.52(3/8)
AVNH486LLFC		
AVNH606LLFC		

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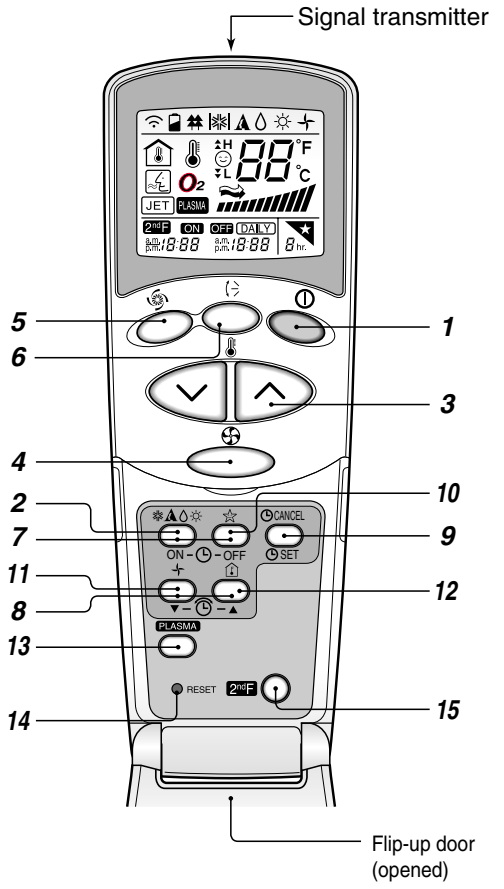
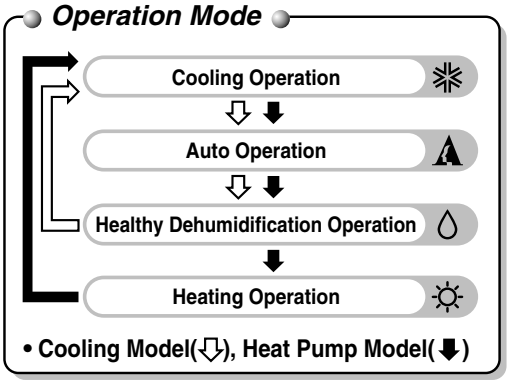
7. Operating Instructions

■ Remote Control Operation

The Remote Controller transmits the signals to the system.





1. START/STOP BUTTON
Operation starts when this button is pressed and stops when the button is pressed again.

2. OPERATION MODE SELECTION BUTTON
Used to select the operation mode.

3. ROOM TEMPERATURE SETTING BUTTONS
Used to select the room temperature.

4. INDOOR FAN SPEED SELECTOR
Used to select fan speed in four steps low, medium, high and CHAOS.

5. JET COOL
Used to start or stop the speed cooling/heating.
(Speed cooling/heating operates super high fan speed.)

6. CHAOS SWING BUTTON
Used to stop or start louver movement and set the desired up/down airflow direction.

7. ON/OFF TIMER BUTTONS
Used to set the time of starting and stopping operation.

8. TIME SETTING BUTTONS
Used to adjust the time.

9. TIMER SET/CANCEL BUTTON
Used to set the timer when the desired time is obtained and to cancel the Timer operation.

10. SLEEP MODE AUTO BUTTON
Used to set Sleep Mode Auto operation.

11. AIR CIRCULATION BUTTON
Used to circulate the room air without cooling or heating.

12. ROOM TEMPERATURE CHECKING BUTTON
Used to check the room temperature.

13. PLASMA(OPTIONAL)
Used to start or stop the plasma-purification function.

14. RESET BUTTON
Initialize remote controller.

15. 2nd F Button
Used prior to using modes printed in blue at the bottom of buttons.

❊ For the convertible type of air conditional, jet cool mode does not operate.

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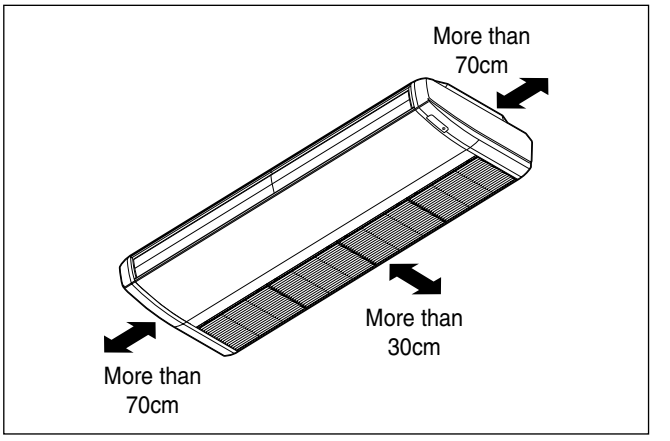
8. Installation

- Please read this instruction sheet completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.

8.1 Selection of the best location

Indoor unit

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to prevent the air circulation.
- A place where air circulation in the room will be good.
- A place where drainage can be easily obtained.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, or other obstacles.



8.2 Indoor unit installation

Installation of Unit

Unit should be installed for horizontal discharge application only.

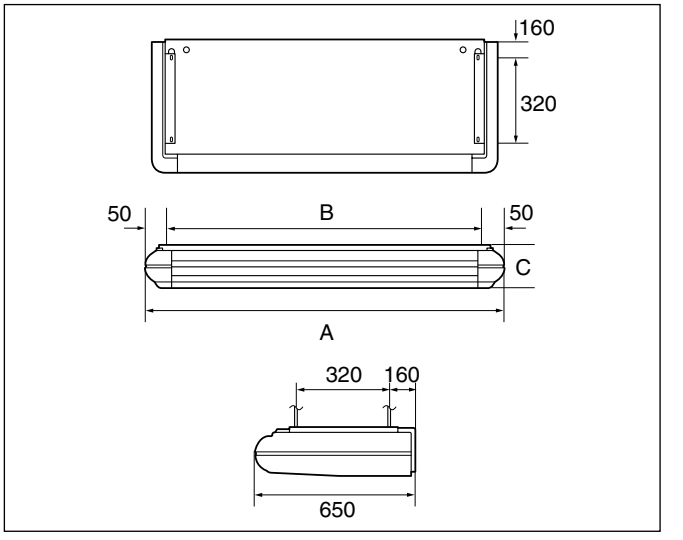
CASE 1

POSITION OF SUSPENSION BOLT

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.

(Unit:mm)

Dimension / Chassis	A	B	C
VL Chassis	1750	1655	220
VK Chassis	1350	1255	220



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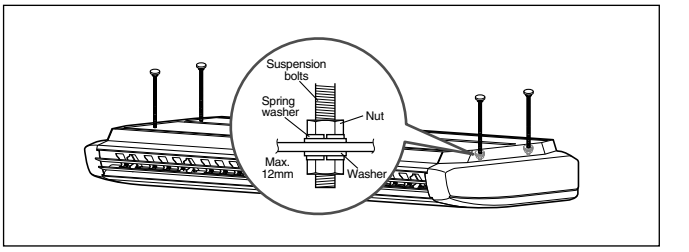
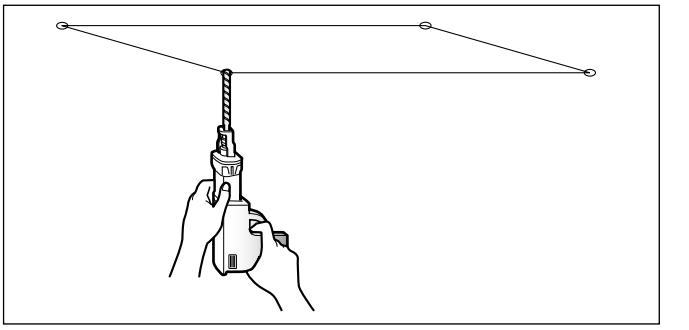
CASE 2

- Install the unit leaning to a drainage hole side as a figure for easy water drainage.

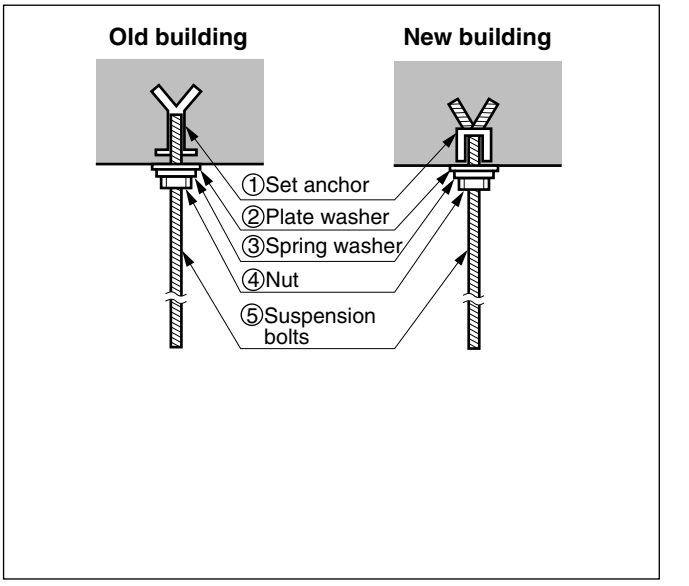


POSITION OF CONSOLE BOLT

- A place where the unit will be leveled and that can support the weight of the unit.
- A place where the unit can withstand its vibration.
- A place where service can be easily performed.



- Select and mark the position for fixing bolts.
- Drill the hole for set anchor on the face of ceiling.



- Insert the set anchor and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- Mount the suspension bolts to the set anchor firmly.
- Secure the installation plates onto the suspension bolts (adjust level roughly) using nuts, washers and spring washers.

⚠CAUTION

: Tighten the nut and bolt to prevent unit falling

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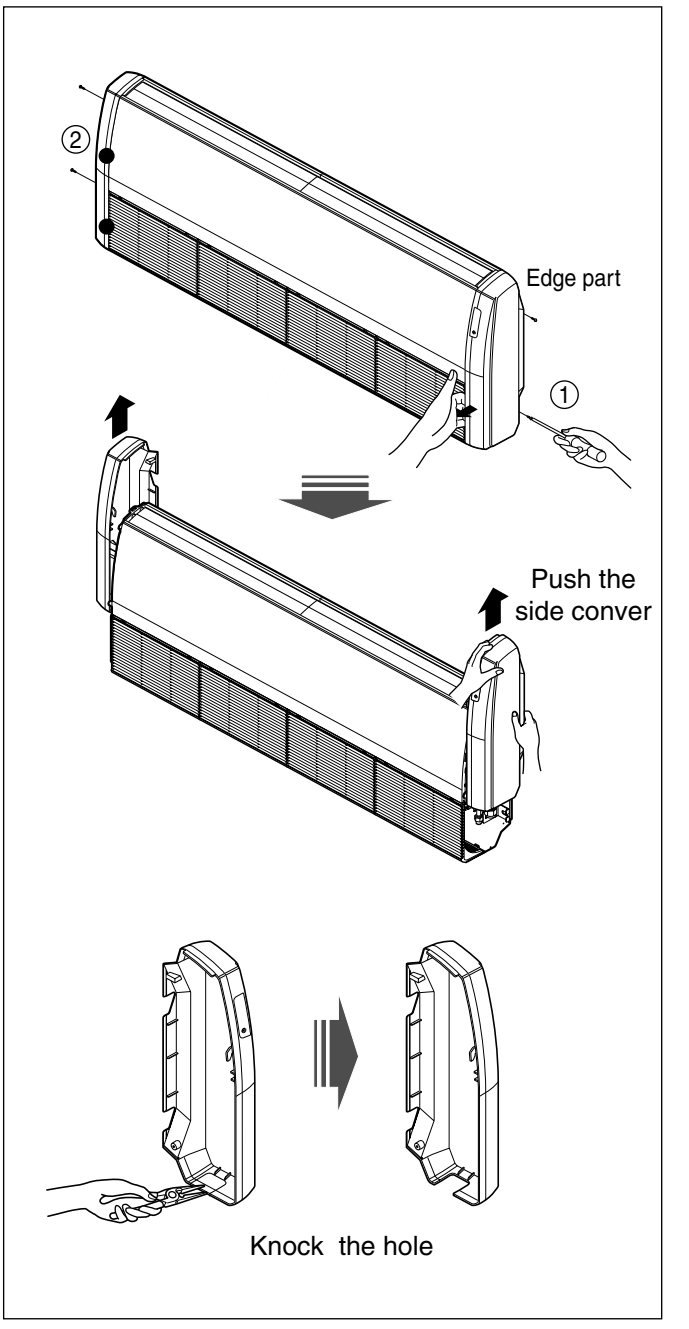
8.3 Preparing Work for Installation

Open side cover

1. Remove two screws from side-cover as shown in fig.
2. Unlock side-cover from side panel by slightly pulling the edge of side cover.
3. Tap the side-cover with your palm on the backside.(Inlet grill side.)
4. Hold the side-cover with other hand while tapping to prevent it to fall down.

Recommendation: it is recommended to select the left side for drain to have common hole in the side-cover along with pipe and wiring.

5. Remove the rubber stopple in the desired drain direction.
6. Knock out the pipe hole from the left side-cover with the help or nipper/plier.
7. Knock hole on right side-cover only if right side is selected for water drain.



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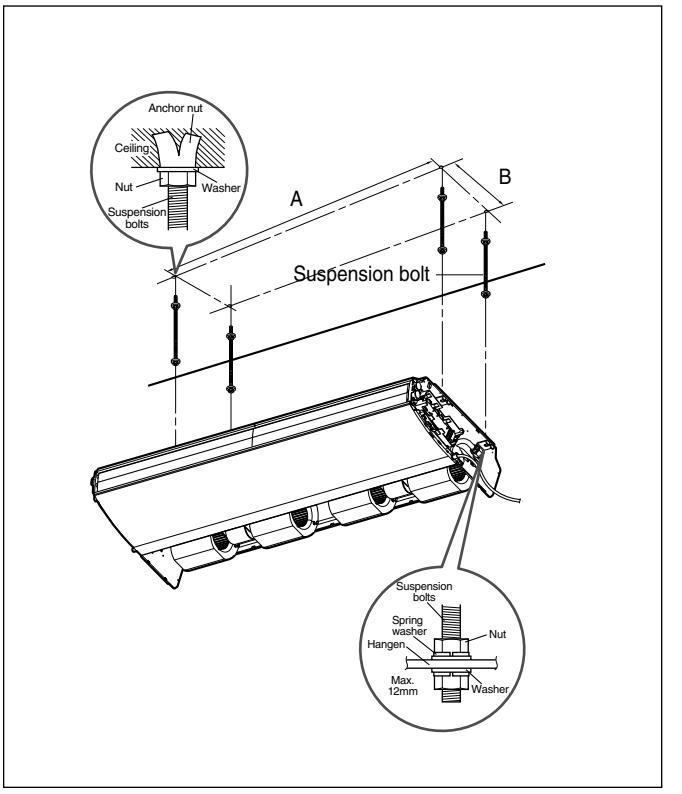
8.4 Mounting the anchor Nut & Bolt(Ceiling Mounting)

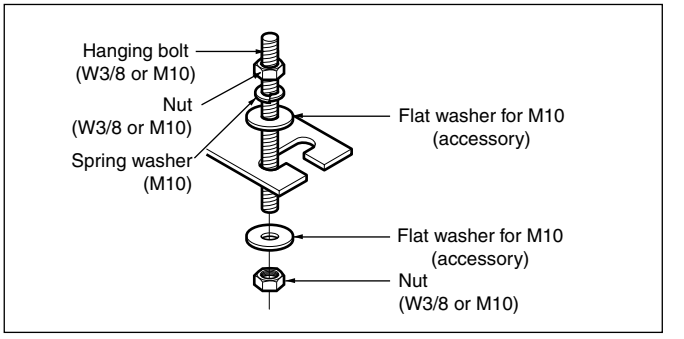
MOUNTING THE ANCHOR NUT AND BOLT

- Prepare 4 suspension bolts. (Each bolts length should be same.)
- Measure and mark the position for the Suspension bolts and the piping hole.
- Drill the hole for anchor nut on the ceiling.
- Insert the nuts and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- Mount the suspension bolts to the anchor-nuts firmly.
- Secure the hangers onto the Suspension bolts (adjust level roughly.) using nuts, washers and spring washers.
- Adjust a level with a level gauge on the direction of left-right, back-forth by adjusting suspension bolts.
- Adjust a level on the direction of top-bottom by adjusting supension bolts. Then the unit will be declined to the bottomside so as to drain well.



(Unit:mm)

Dimension / Chassis	A	B
VL Chassis	1655	320
VK Chassis	1255	320

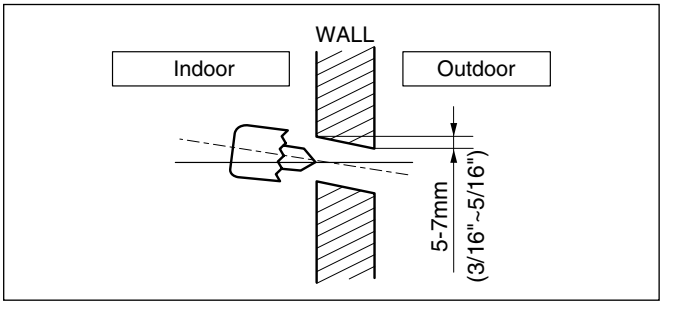


⚠CAUTION

: Tighten the nut and bolt to prevent unit falling.

DRILL A HOLE IN THE WALL.

- Drill the piping hole with a ø70mm hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.



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8.5 Indoor unit installation

Hang the Indoor unit on suspension bolt as per following guidelines:

1. Lift the indoor unit to sufficient height.
2. Insert the suspended part of four suspension bolt in the four hangers provided on the side of main body one by one.
3. Lower the indoor unit till the hangers rest on their respective flat washer.
4. Adjust the level in the top down direction by adjusting the suspension bolts.
   Inclined the indoor unit as per direction provided in the fig

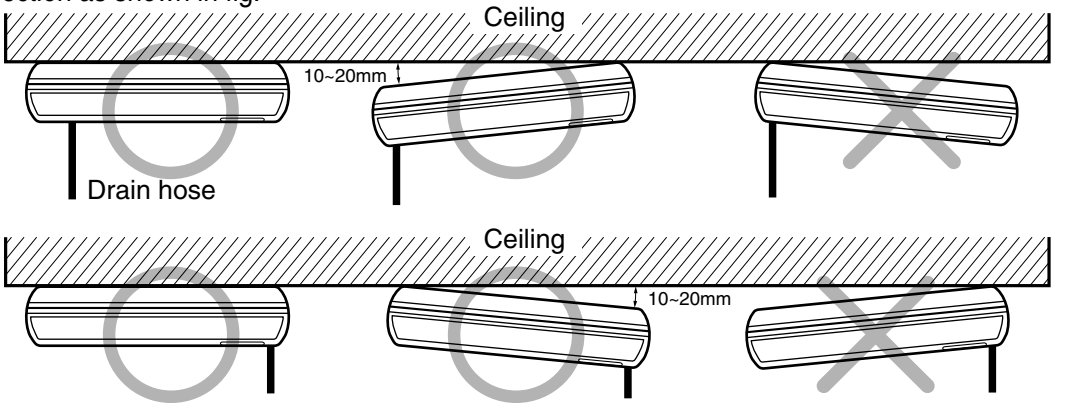
⚠CAUTION

: Installation Information For Declination

1. **Install declination** of the indoor unit is very **important for the drain** of the convertible type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe shall be 10mm.
3. If the Installation Plates are fixed to horizontal line, the indoor unit after installing will be declined to the bottomside.

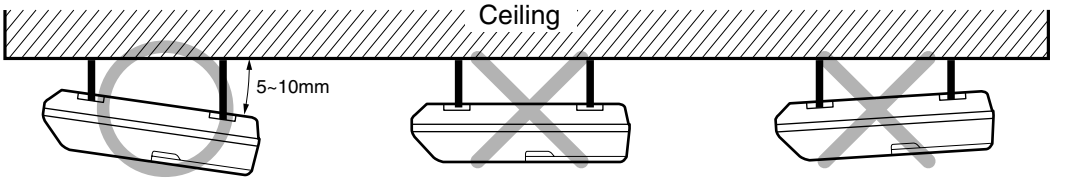
Front of view

- The unit must be horizontal or inclined at angle.
- The inclination should be less thanr or euql to 1° or in between 10 to 20mm inclined in drain direction as shown in fig.



Side of view

- The unit must be declined to the bottomside of the unit when finished installation.



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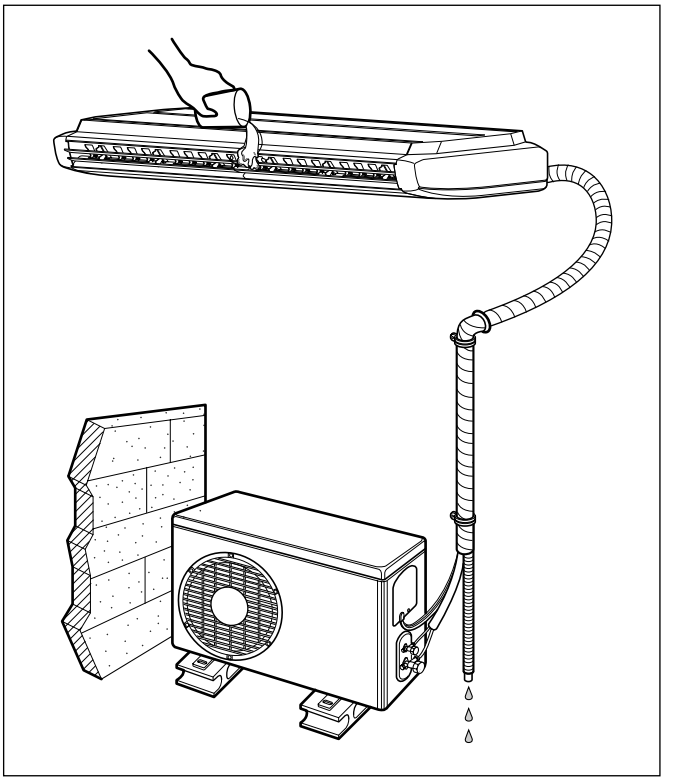
8.6 Checking the Drainage

1. Set the air direction louvers up-and-down to the position(horizontally) by hand.

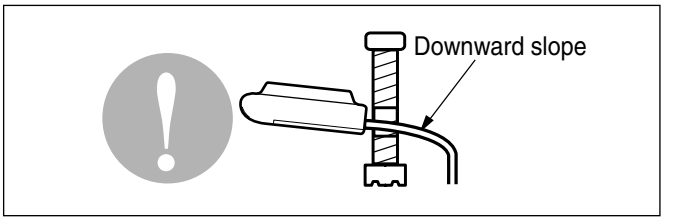


To check the drainage.

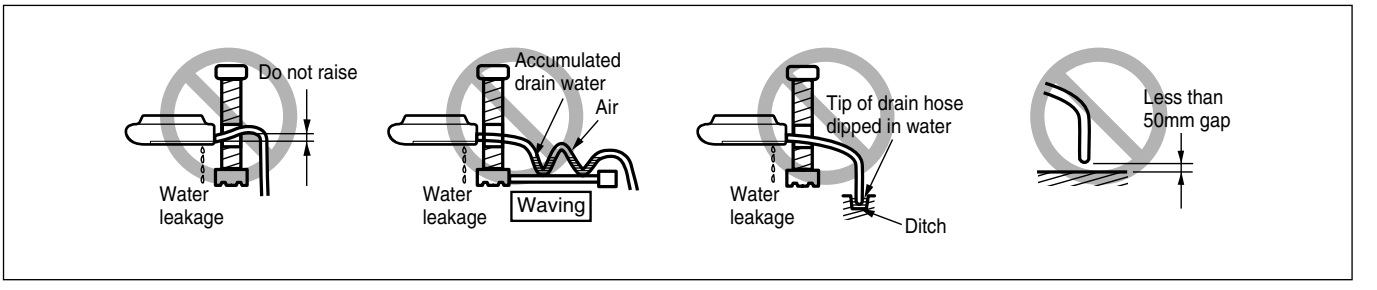
1. Pour a glass of water on the evaporator using a kettle.
2. Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.

Drain piping

1. The drain hose should point downward for easy drain flow.



2. Do not make drain piping like the following.



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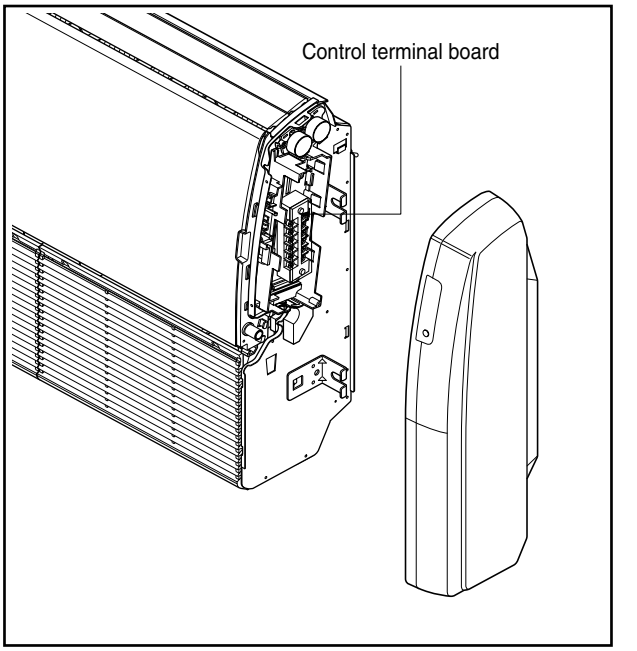
8.7 Connecting the Cables

Indoor

1. The control box of indoor unit is on the left side when seen from front side.
2. Connect the cable to the indoor unit by connecting the wires to the terminals on the control board individually according to the outdoor unit connection (Ensure that the color of the wires of the outdoor unit and the terminal no. are same as the those of the indoor unit)



⚠CAUTION

• The circuit diagram behind the panel is subject to change without notice.
• The earth wire should be longer than the common wires.
• When installing, refer to the circuit diagram behind the panel front of the indoor unit.
• Connect the wires firmly so that they may not be pulled out easily.
• Connect the wires according to color codes, referring to the wiring diagram.

⚠CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

1) Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.

2) Provide a circuit breaker switch between power source and the unit.

3) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could give rise to burn-out of the wires.)

4) Specification of power source

5) Confirm that electrical capacity is sufficient.

6) Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.

7) Confirm that the cable thickness is as specified in the power sources specification.
(Particularly note the relation between cable length and thickness.)

8) Never fail to equip a leakage breaker where it is wet or moist.

9) The following troubles would be caused by voltage drop-down.

- Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.
- Proper starting power is not given to the compressor.

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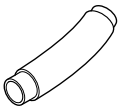
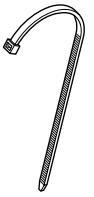
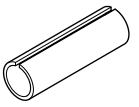
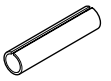
9. Accessories

Standard Accessories

Name	Drain hose	Clamp metal	Washer for hanging backet	Clamp	Insulation for fitting	(Other)
Quantity	1 EA	1 EA	8 EA	6 EA	1 set	
Shape					 for gas pipe  for liquid pipe	• Owner's manual • Installation manual

Optional Accessories(For Unit)

No.	Item	Type	Model No.	Component Parts
1	Central control	Simple	PQCSA101S0	• Central control • Installation manual
2	PI485 Gateway	For central control	PHNFP14A0	• PCB: 1EA • Installation manual • Wire assembly

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Ceiling Concealed Duct

Ceiling Concealed Duct
(R410A·Indoor Units)

ABNH-HL/GL/RL

Contents

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1. Features & Benefits

■ Easy Installation
- Compact & light design
- EZtuning (Linear E.S.P Control)
- High head drain pump(700mm, Accessory)

■ Comfort & Reliability
- Low noise design
- 2-Thermistor control(Main body & Remote control)
- Zero stanby power consumption

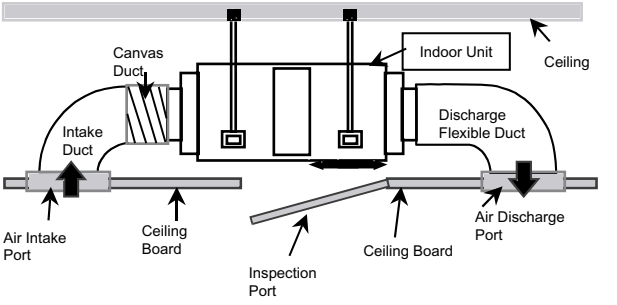
■ Convenience
- Tele control(Accessory)
- LCD wired remote control
- Group control
- Zone control(Accessory)
- Central control(Accessory)
- Weekly progam

■ Cleanness
- Plasma air purifying system(Accessory)
- Hygienic and easy to clean filter

Easy Installation

Flexible Duct is easy to install, regardless of room size or heater position.

It can be installed even in a limited space and saves construction cost with slim thickness

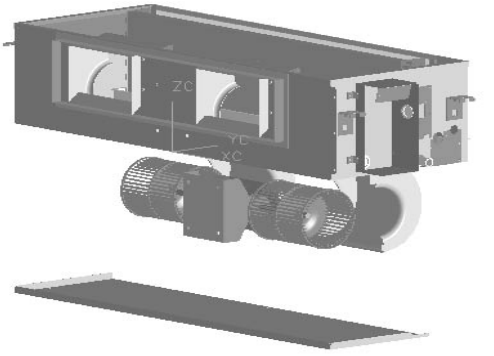


Innovative Design of Fan and Housing System

Low Noise ! Easy Serviceability!

Plastic Fan and Housing Assembly

- Designed for low noise
- Designed to reduce weight
- Designed for easy service



This product guarantees lower sound level and gives lesser service expenses.

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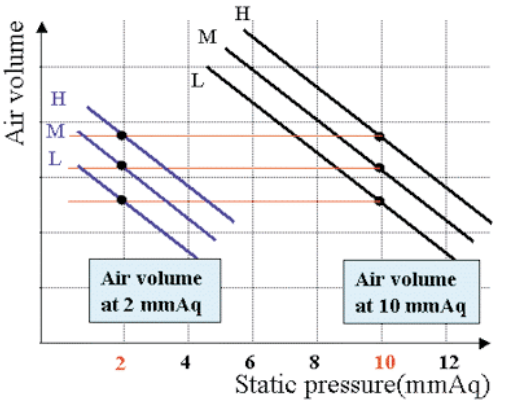
EZ Tuning

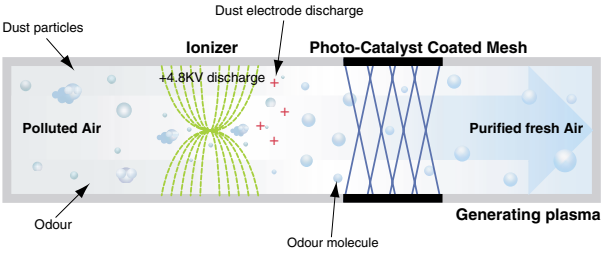
LG's High Technology provide Easy and Low cost Design of Duct work

Generally, when External Static Pressure increases air volume decreases. But by controlling the phase of motor while installing the product E.S.P. is controlled from 8~10 mmAq linearly. E.S.P. control provides required constant air volume irrespective of ESP change. Desired ESP can also be set through LCD wired remote control. Setting of the desired ESP gives required combination of ESP and airflow.



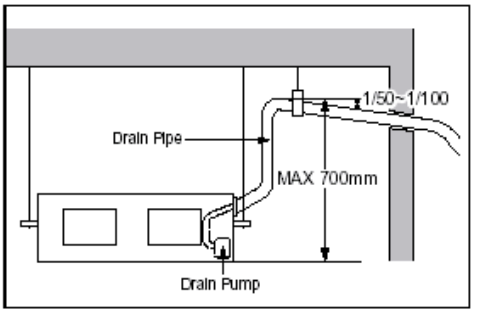
Plasma Air Purifying Kit (Accessory)

The PLASMA Air Purifying Function not only removes microscopic contaminants and dust, but also removes house mites, pollen, and pet fur helps to prevent allergic diseases like asthma.



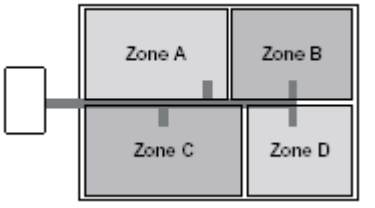
High Head Drain Pump(Accessory:700mm)

In some of the places natural drainage is not possible. For such places drain pump is very useful. It removes condensed water from the unit.



Zone Control(Accessory)

It controls the temperature of each zone. Opening or closing of the damper is controlled by sensing the temperature of each zone. In the cooling mode, if the temperature of a particular zone is lower than set temperature then the damper is closed. On the other hand if the temperature of a particular zone is higher than the set temperature, damper is opened to provide cooling to the zone and vice versa in the heating mode.



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2. List of Functions

Category	Function	ABNH366GLAC [UB36 NGC]	ABNH426RLAC [UB 42 NRC]	ABNH486RLAC [UB48 NRC]	ABNH606RLAC [UB60 NRC]
Air flow	Air supply outlet	2	2	2	2
	Airflow direction control (left & right)	-	-	-	-
	Airflow direction control (up & down)	-	-	-	-
	Auto swing (left & right)	-	-	-	-
	Auto swing (up & down)	-	-	-	-
	Airflow steps(Fan / Cool / Heat)	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3
	CHAOS swing(Wall mounted / Artcool)	-	-	-	-
	CHAOS wind (Auto wind)	-	-	-	-
	Jet cool (Power wind)	-	-	-	-
	Swirl wind	-	-	-	-
Air purifying	Deodorizing filter	-	-	-	-
	Plasma air purifier	ABPAGH	ABPAGH	ABPARH	ABPARH
	Prefilter(Washable / Anti-fungus)	O	O	O	O
Installation	Drain pump	ABDPG	ABDPG	ABDPG	ABDPG
	E.S.P. control	O	O	O	O
	Electric heater (Operation)	-	-	-	-
	High ceiling operation	-	-	-	-
Reliability	Hot start	O	O	O	O
	Self diagnosis	O	O	O	O
	Soft dry operation	O	O	O	O
Convenience	Auto changeover	O	O	O	O
	Auto cleaning	X	X	X	X
	Auto operation(Artificial intelligence)	X	X	X	X
	Auto restart operation	O	O	O	O
	Child lock	O	O	O	O
	Forced operation	O	O	O	O
	Group control	O	O	O	O
	Sleep mode	X	X	X	X
	Timer (On/Off)	O	O	O	O
	Timer (weekly)	O	O	O	O
	Two thermistor control	O	O	O	O
Individual control	Standard wired remote controller	O	O	O	O
	Deluxe wired remote controller	X	X	X	X
	Simple wired remote controller	X	X	X	X
	Wired remote controller(for hotel use)	X	X	X	X
	Wireless remote controller(simple)	X	X	X	X
	Wireless LCD remote controller	X	X	X	X
CAC network function	General central control(Non LGAP)	X	X	X	X
	Dry contact	PQDSB	PQDSB	PQDSB	PQDSB
	Simple central control(LGAP)	O	O	O	O
	PDI(Power Distribution Indicator)	PQNUD1S00	PQNUD1S00	PQNUD1S00	PQNUD1S00
	PI485	PMNFP14A0	PMNFP14A0	PMNFP14A0	PMNFP14A0
Special function kit	CTIE	X	X	X	X
	Zone control	ABZCA	ABZCA	ABZCA	ABZCA
Others	Thermistor	AQTTA	AQTTA	AQTTA	AQTTA

• O: Applied, • X: Not applied, • - : No relation,
• Option: Model name & price are different according to options, and assembled in factory with main unit.
• Accessory: Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

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3. Specifications

Indoor unit type			Ceilling Concealed Duct - High Static			
Model			ABNH366GLAC [UB36 NGC]	ABNH426RLAC [UB42 NRC]	ABNH486RLAC [UB48 NRC]	ABNH606RLAC [UB60 NRC]
Power Supply		Ø/V/Hz	1 / 220 ~240 / 50	1 / 220 ~240 / 50	1 / 220 ~240 / 50	1 / 220 ~240 / 50
Cooling Capacity		kW	9.8	11.9	13.2	14.9
		Btu/h	33,500	40,500	45,000	51,000
Heating Capacity		kW	10.8	13.8	14.9	16.9
		Btu/h	37,000	47,000	51,000	57,500
Current	Nominal running current	A	1.42	3.65	3.65	3.65
Fan	Motor Type		Induction	Induction	Induction	Induction
	Fan Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output x Number of Unit		272*2	431*2	431*2	431*2
	Air Flow Rate(H/M/L)	cmm	32/29/26	36/32/28	40/35/30	50/45/40
		cfm	1130/1024/918	1260/1120/980	1413/1236/1059	1766/1413/1236
	External Static Pressure	mmAq	10	10	15	15
	Capacitor	µF/Vac	6/370	15/450	15/450	15/450
	Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive
Coil	Row x Columns x FPI	mm	3R x 10C x 21	3R x 10C x 21	3R x 13C x 19	4R x 13C x 19
Dimensions(WxHxD)	Body	mm(inch)	1180*298*450(46.5*11.7*17.7)	1230*380*590(48.4*15.0*23.2)	1230*380*590(48.4*15.0*23.2)	1230*380*590(48.4*15.0*23.2)
Weight	Body	kg(lbs)	38(84)	60(132)	60(132)	60(132)
Air Filter			Long life filter	Long life filter	Long life filter	Long life filter
Sound Level (H/M/L)		dB(A)+3	42/39/36	42/40/38	44/42/40	46/44/42
Piping Connections	Liquid	mm(inch)	6.35 (1/4)	9.52(3/8)	9.52(3/8)	9.52(3/8)
	Gas	mm(inch)	15.88(5/8)	19.05(3/4)	19.05(3/4)	19.05(3/4)
	Drain(OD/ID)	mm	32/25	32/25	32/25	32/25
Dehumidification Rate		l/h	4	5	6	6.5
Safety devices			Fuse, Thermal protector for fan motor			
Temperature Sensor			Thermistor	Thermistor	Thermistor	Thermistor
Referigerant			R-410A	R-410A	R-410A	R-410A
Referigerant Control			LEV	LEV	LEV	LEV
Connectable outdoor unit			Single A	Single A	Single A	Single A
Power and transmission interunit cable		No.x mm^2	4*0.75	4*0.75	4*0.75	4*0.75

Note :

1. Capacities are based on the following conditions:
   Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
   - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
   Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
   - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
   Piping Length - Interconnecting Piping Length 7.5m
   - Level Difference of Zero.
2. Cooling/heating capacity of indoor unit can be different when it is connected to other type outdoor.

Conversion Formula
kW = Btu/h × 0.0002931
kcal/h = Btu/h × 0.252
CFM = CMM × 35.3

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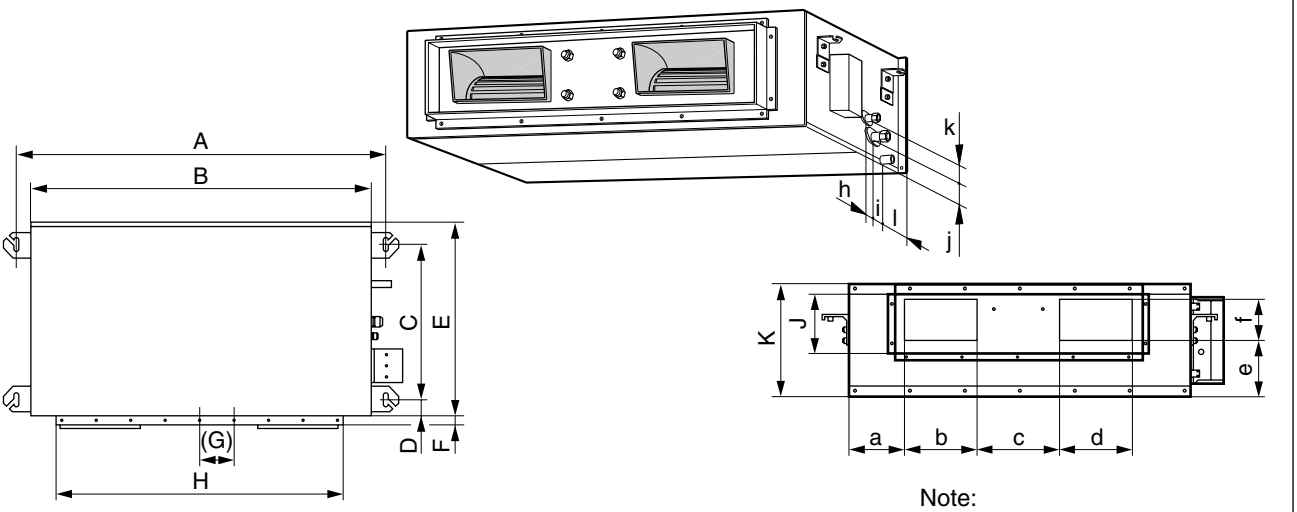
4. Dimensional Drawings

ABNH-GL, RL



Note:

1. Pipe Specification(mm)

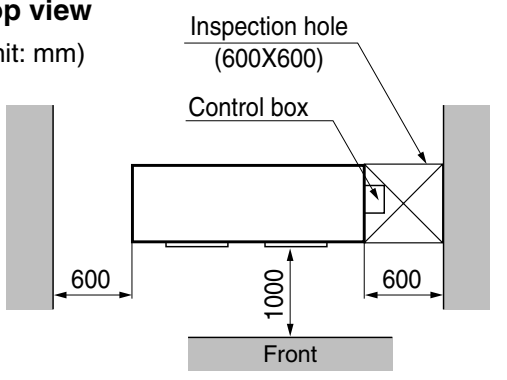
Model	Liquid	Gas
36k	Ø 6.35	Ø 15.88
42k, 48k, 60k	Ø 9.52	Ø 19.05

(Unit: mm)

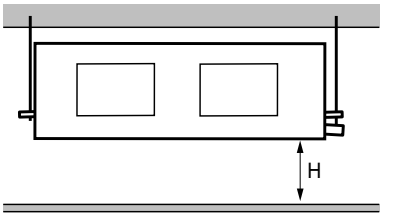
Capacity	A	B	C	D	E	F	(G)	H	J	K	a	b	c	d	e	f	h	i	j	k	l
ABNH366GLAC	1232	1182	355	45.5	450	30	87	830	186	298	229.5	243	232	243	116	160	53	59	81	19	158.5
ABNH426RLAC ABNH486RLAC ABNH606RLAC	1282	1230	477	56	590	30	120	1006	294	380	215	279	241	279	185	168	51	98	83	17	172

Top view

(unit: mm)



Front view



※Suitable dimension "H" is necessary to get a slope to drain as figure.

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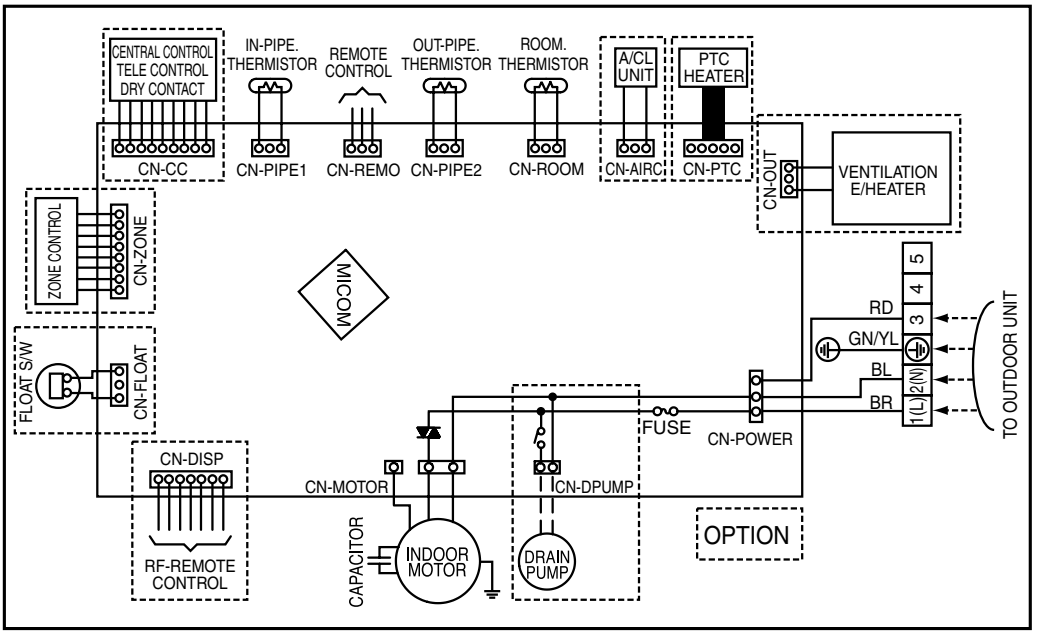
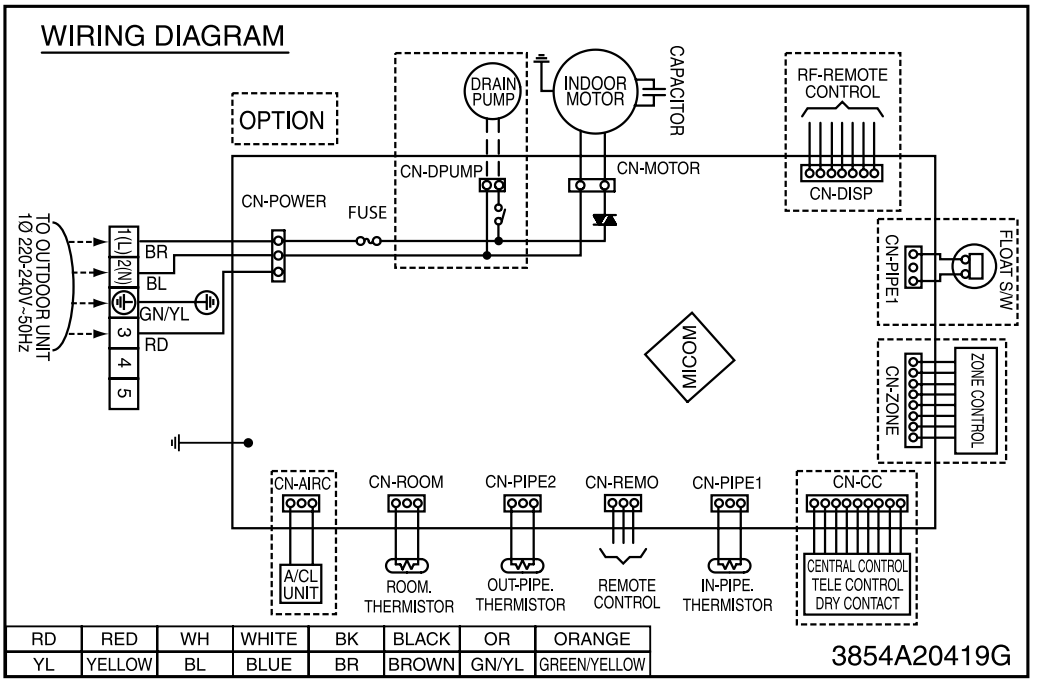
5. Wiring Diagrams

ABNH-HL, ABNH-GL



ABNH-RL



CONNECTOR NUMBER	LOCATION	CONNECTOR NUMBER	LOCATION
CN-POWER	AC POWER SUPPLY	CN-PIPE1	PIPE SENSOR
CN-MOTOR	BLDC FAN MOTOR OUTPUT	CN-PIPE2	DISCHAGE PIPE SENSOR
CN-D/PUMP	DRAIN PUMP OUTPUT	CN-REMO	REMOTE CONTROL
CN-DISP	RF-REMOTE CONTROL	CN-ROOM	ROOM SENSOR
CN-FLOAT	FLOAT SWITCH INUT	CN-AIRC	AIR CLEAN
CN-ZONE	ZONE CONTROL OUTPUT	CN-PTC	PTC HEATER
CN-CC	CENTRAL CONTROL OUTPUT	CN-OUT	VENTILATION /ELECTRIC HEATER

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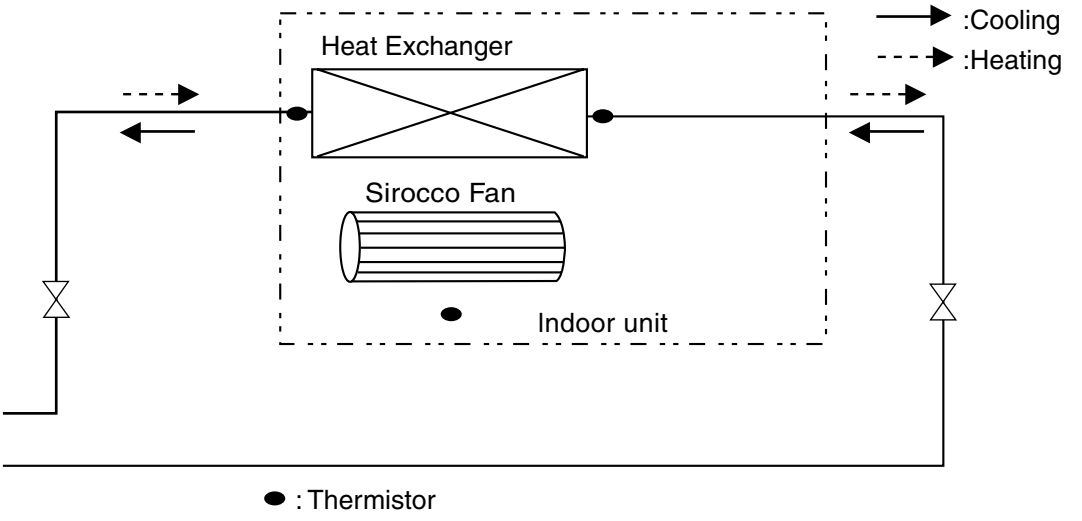
6. Piping Diagrams



Refrigerant pipe connection port diameter

[unit: mm(inch)]

Model	Gas	Liquid
ABNH366GLAC	15.88(5/8)	6.35(1/4)
ABNH426RLAC	19.05(3/4)	9.52(3/8)
ABNH486RLAC		
ABNH606RLAC		

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7. E.S.P. Setting for EZTuning

EZTuning (E.S.P. Control) provide required constant air volume irrespective of E.S.P. charge.

(1) Open the rear cover of the wired remote-controller to set the mode.

(2) Select one of three selectable modes as follows.

■ Without Zone System

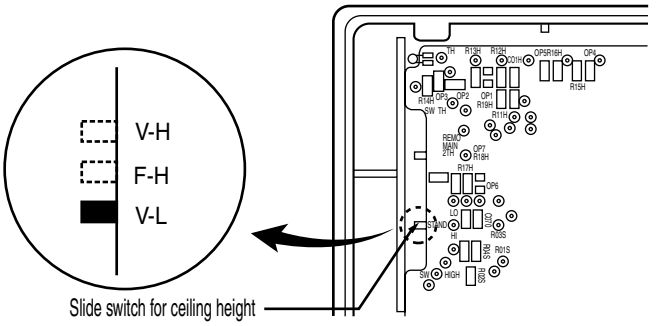
1. Position V-H, F-H:
   • This position sets the maximum E.S.P as a default set.
2. Position V-L:
   • This position sets the minimum E.S.P as a default set.

■ With Zone System

1. Position V-H:
   • Maximum E.S.P setting & Fan speed is varied according to the state of dampers by micom.
2. Position F-H:
   • Maximum E.S.P setting & Fan speed doesn't vary according to the opening & Closing of dampers.
3. Position V-L:
   • Minimum E.S.P setting & Fan speed is varied according to the state of dampers by micom.

*Maximum: 18/24k - 8mmAq
30/36k - 10mmAq
48/60k - 15mmAq
Minimum: All-0mmAq

(3) Move the slide switch to set position.



(4) Close the rear cover and check if it works normally.

⚠ CAUTION

- Select the position after checking duct work and E.S.P of the unit.
- Maunfactured in the position F-H.

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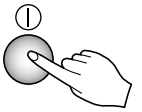
How to Set E.S.P?

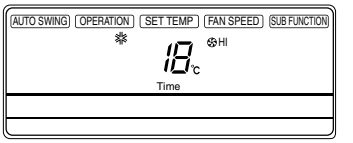
Procedure of RPM change:

Ex) External Static pressure is 4mmAq for Model Name "ABNH246HLAB".

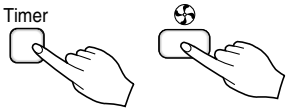
• To protect the unit, compressor is designed to be off during E.S.P. setting.

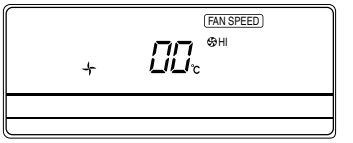
1 Push the "On/Off" button.
The unit will start.



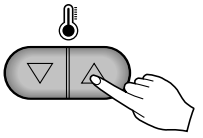


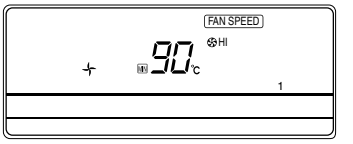
2 Push the "Timer" and "Wind" button simultaneously for more then 3 seconds.





3 Push the "Up" of "Down" button for E.S.P adjustment.
And, adjust the number which you want.(In this example, the number is "190".
Refer to the table 7-1 on the next page.)

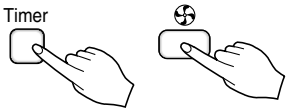




Note: The range of selection is from 1~254. Since, the display is two Digit only.
If the range selection is above 100 then the third digit will appear in the screen as shown.

4 Shift the fan speed mode by pressing the fan speed button.
And then, Adjust numbers of next steps by repeating the stage 3.
(In this example, the numbers are "220" and "235" respectively.

5 Push the "Timer" and "Wind" button simultaneously for more than 3 seconds.
Then, Wind Data is memorized by the EEPROM of the main PCB.



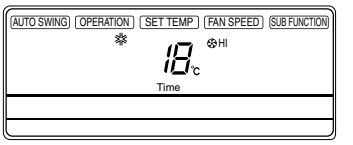


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Table 7-1

Static Pressure(mmAq)			0	2	4	6	8	10	12	14	15
Model Name	Step	CMM(CFM)	Setting Value								
ABNH366GLAC	High	32(1130)	230	230	225	220	150	1			
	Med	29(1024)	240	238	237	235	230	220			
	Low	26.5(936)	245	245	243	243	240	240			
ABNH426RLAC	High	36(1271)	238	235	230	225	220	215			
	Med	32(1130)	253	250	245	240	235	230			
	Low	28(989)	255	255	255	255	250	248			
ABNH486RLAC	High	40(1412)	230	225	220	215	205	200	190	180	160
	Med	35(1235)	250	245	240	235	230	220	215	210	200
	Low	30(1059)	255	255	255	250	245	240	235	230	225
ABNH606RLAC	High	50(1766)	185	180	174	162	154	140	90	5	1
	Med	45(1589)	210	205	199	191	189	180	155	138	110
	Low	40(1423)	230	225	219	215	210	205	193	180	171

Note: 1. To get the desired Airflow & E.S.P combination from the table set the matching value from the table. Value other than that in table will not give the combinations of airflow & ESP which are mentioned in the table.

2. Table 7-1 is based at 230V. According to the fluctuation of voltage, air flow rate varies.

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Table 7-2

Model Name	Step	Setting Value	Static Pressure(mmAq)								
			0	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**15**
			CMM(CFM)								
ABNH366GLAC	High	1	42(1483)	40(1413)	38(1342)	35.5(1254)	33.5(1183)	32(1130)			
	Med	220	39(1377)	37(1307)	35(1236)	33(1165)	31(1095)	29(1024)			
	Low	240	34(1201)	32.5(1148)	31(1095)	29.5(1042)	27(954)	26.5(936)			
ABNH426RLAC	High	215	44.5(1572)	43.4(1533)	41(1448)	39.4(1402)	37.5(1324)	36.4(1286)			
	Med	230	41(1448)	40.2(1420)	37.6(1328)	35(1236)	33.8(1194)	32.7(1155)			
	Low	248	37(1307)	36.1(1275)	34.6(1222)	31.5(1112)	29.1(1028)	27.9(985)			
ABNH486RLAC	High	200	49(1730)	47.4(1675)	44.9(1584)	43.3(1529)	41.7(1472)	40(1412)	38.6(1361)	37(1305)	35.4(1249)
	Med	220	44(1554)	42.4(1498)	40.2(1420)	39.2(1384)	36.7(1296)	35(1236)	34.6(1220)	33(1164)	32.2(1137)
	Low	240	38(1342)	37.2(1314)	35(1234)	32.4(1145)	31.6(1114)	30(1059)	28.6(1008)	27(953)	26.2(925)
ABNH606RLAC	High	140	59(2083)	57.4(2028)	55.8(1969)	53.4(1886)	51.7(1826)	50(1766)	46.6(1644)	42.9(1516)	40.6(1432)
	Med	180	53(1871)	51.4(1816)	49.8(1758)	47.4(1674)	45.9(1621)	45(1589)	42.6(1502)	39.6(1397)	38.3(1352)
	Low	205	47(1660)	45.8(1618)	43.8(1547)	42.1(1488)	40.7(1435)	40(1412)	37.8(1335)	35(1234)	33.4(1179)

Notes:

1) The above table shows the correlation of External Static Pressure & Air Flow.

2) When installing, the value of motor step needs to be set according to E.S.P. of the table 7-2.

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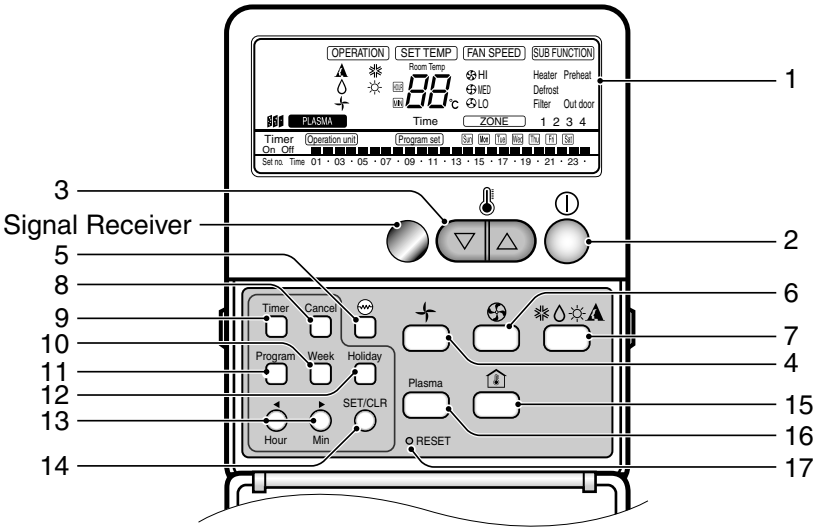
8. Operating Instructions

■ Name and Function of Remote Controller



1. Operation display
Displays the operation conditions.

2. On/Off Button
Operation starts when this button is pressed, and stops when the button is pressed again.

3. Set Temperature Button
Used to set the temperature when the desired temperature is obtained.

4. FAN Operation Button
Used to circulate room air without cooling or heating.

5. Electric Heater Button(optional)
Used to set the Electric Heater.

6. Fan Speed Button
Used to set desired fan speed.

7. Operation Mode Selection Button
Used to select the operation mode.
- Auto Operation Mode.
- Cooling Operation Mode.
- Soft Dry Operation Mode.
- Heating Operation Mode.(except cooling model)

8. Timer Cancel Button
Used to cancel the timer.

9. Timer Set Button
Used to set the timer when the desired time is obtained.

10. Week Button
Used to set a day of the week.

11. Program Button
Used to set the weekly timer.

12. Holiday Button
Used to set a holiday of the week.

13. Time Set Button
Used to set the time of the day and change the time in the weekly timer Function.

14. Set and Clear Button
Used to set and clear the weekly timer.

15. Room Temperature Checking Button
Used to check the room temperature.

16. Plasma Air Clean Button(optional)

17. Reset Button
Used to set the current time and clear the setting time.

❊ Display temperature can be different from actual room temperature if the remote controller is installed at the place where sun-rays are falling directly or the place nearby heat source.

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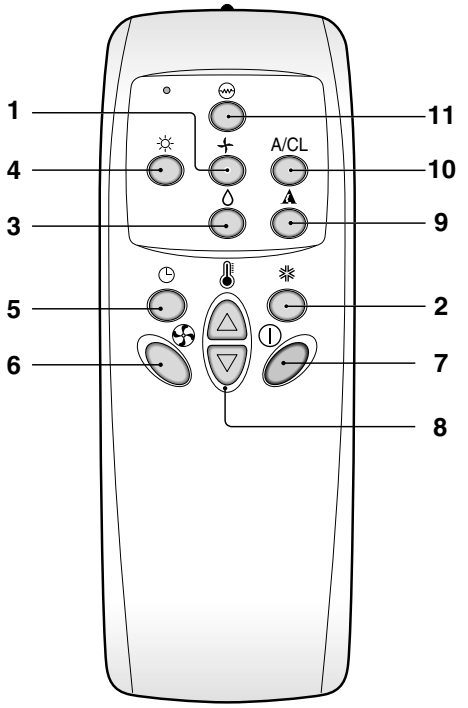
■ Optional Function

• Wireless Remote Controller

This air-conditioner is equipped with wired remote controller basically. But if you want to have the wireless remote controller, you pay for it.

Signal transmitter

Transmits the signals to the signal receptor.



1. **FAN Operation Button**
   Used to circulate room air without cooling or heating.
2. **Cooling Operation Button**
3. **Soft Dry Operation Button**
   Used to dehumidify without overcooling.
4. **Heating Operation Button**
   (Heat pump model only)
5. **Timer Set Button**
   Used to set the timer when the desired time is obtained.
   Then the wired remote controller is set up to 24 hours by an hour but the wireless remote controller is set up to 7 hours by an hour. Therefore, if you want to set over 7 hours, use the wired remote controller.
6. **Fan Speed Button**
   Used to set the desired fan speed.
7. **On/Off Button**
   Operation starts when this button is pressed, and stops when the button is pressed again.
8. **Set Temperature Button**
   Used to set the temperature when the desired temperature is obtained
9. **Auto Operation Button**
10. **Plasma Air Clean Button(Optional)**
11. **Electric Heater Button(Optional)** Used to set the Electric Heater.

⚠ CAUTION : for handling the Remote Controller

- **Aim at the signal receptor on the wired remote controller so as to operate.**
- **The remote control signal can be received at a distance of up to about 7m.**
- **Be sure that there are no obstructions between the remote controller and the signal receptor.**
- **Do not drop or throw the remote controller.**
- **Do not place the remote controller in a location exposed to direct sunlight, or near the heating unit, or any other heat source.**
- **Block a strong light over the signal receptor with a curtain or etc. so as to prevent the abnormal operation. (ex:electronic quick start, ELBA, inverter type fluorescent lamp)**

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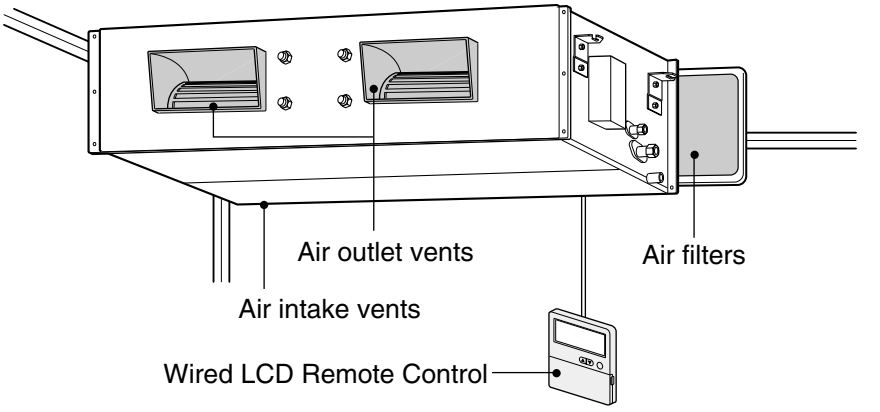
9. Installation

- Please read this instruction sheet completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



Required Parts

- Connecting cable
- Pipes: Gas side
  Liquid side
- Hanging Bolt
  (W 3/8 or M10 length 650mm)
- Insulated drain hose
- Additional Drain hose
  (Outer Dia .....25.4mm)

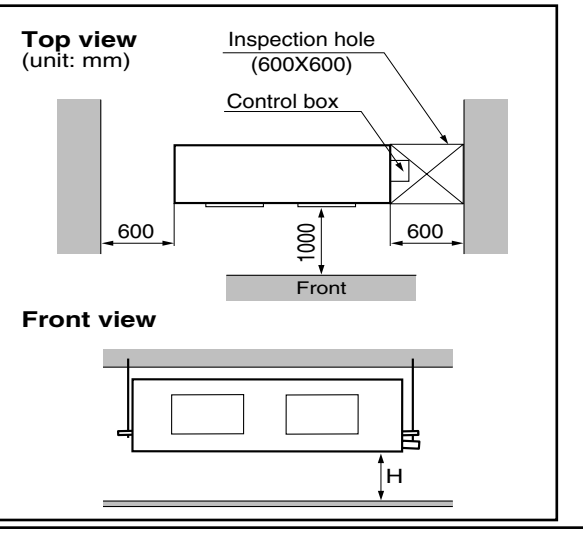
Required Tools

- Level
- Screw driver
- Electric drill
- Hole core drill (ø70mm)
- Flaring Tools set
- Torque Wrenches
- Hexagonal Wrench (4mm, 5mm)
- Gas-leak detector
- Owner's Manual
- Thermometer

9.1 Selection of the best location

Install the air conditioner in the location that satisfies the following conditions.

- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place should have enough area for inspection as shown in figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage.(Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good .
- There should not be any heat source or steam near the unit.



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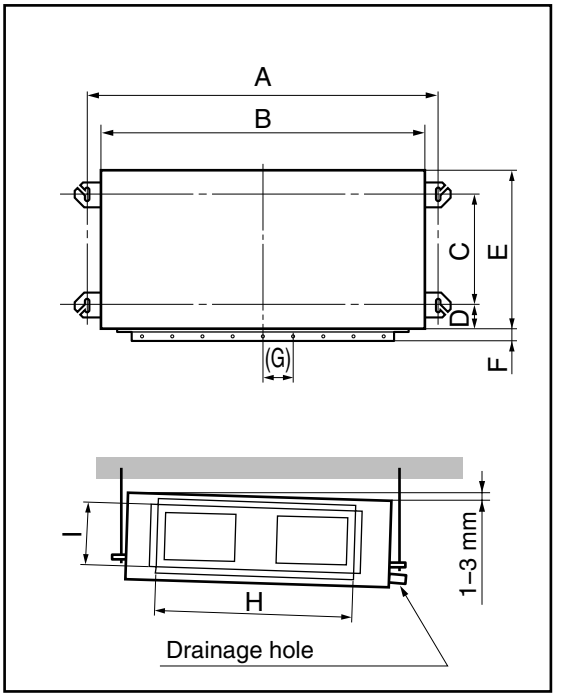
9.2 Ceiling dimension and hanging bolt location

■ **Installation of Unit**

Install the unit above the ceiling correctly.

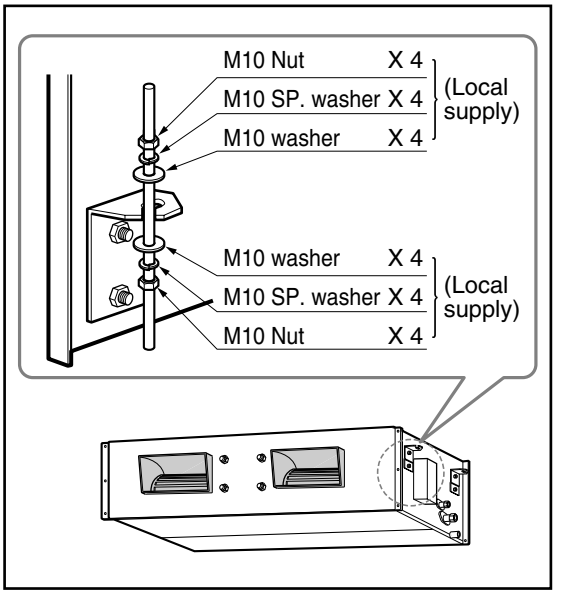


CASE 1

POSITION OF SUSPENSION BOLT

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Apply a filter Accessory at air return hole.
- Refer toDimensinal Drawings.

- Install the unit leaning to a drainage hole side as a figure for easy water drainage.



CASE 2

POSITION OF CONSOLE BOLT

- A place where the unit will be leveled and that can support the weight of the unit.
- A place where the unit can withstand its vibration.
- A place where service can be easily performed.

NOTE:

• Throughly study the following installation locations:

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the fan, the fin of the heat exchanger, resulting in heat exchange reduction, spraying, dispersing of water drops, etc.
In these cases, take the following actions:
• Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
• Make enough distance from a cooking room to install the air conditioner in such a place where it may not suck in oil steam.

2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.

3. Avoid places where inflammable gas is generated, flows in, is stored or vented.

4. Avoid places where sulfurous acid gas or corrosive gas is generated.

5. Avoid places near high frequency generators.

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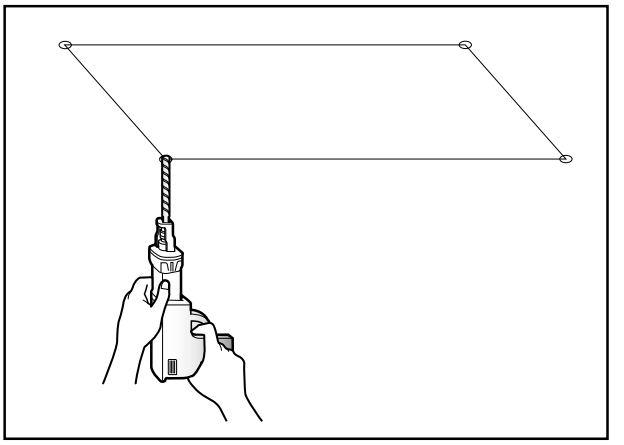
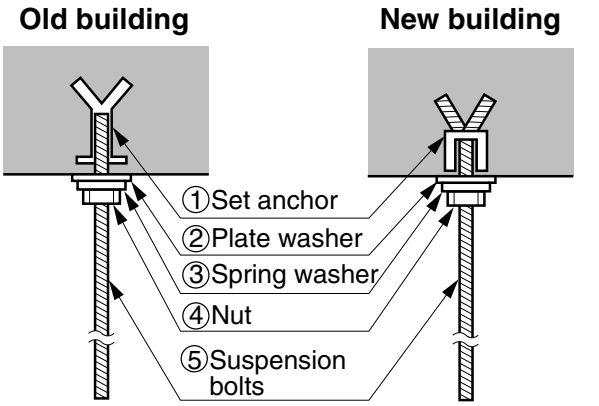
• Select and mark the position for fixing bolts.
• Drill the hole for set anchor on the face of ceiling.



⚠ CAUTION

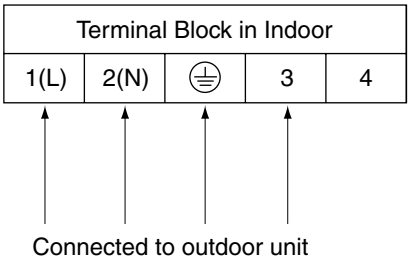
Tighten the nut and bolt to prevent unit falling.

• Insert the set anchor and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
• Mount the suspension bolts to the set anchor firmly.
• Secure the installation plates onto the suspension bolts (adjust level roughly) using nuts, washers and spring washers.



9.3 Connecting Cables

Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
• Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively



⚠ WARNING

Make sure that the screws of the terminal are free from looseness.

Clamping of cables

1) Arrange 2 power cables on the control panel.
2) First, fasten the steel clamp with a screw to the inner boss of control panel.
3) For the cooling model, fix the other side of the clamp with a screw strongly. For the heat pump model, put the 0.75mm^2 cable(thinner cable) on the clamp and tighten it with a plastic clamp to the other boss of the control panel.
4) In Australia, the length of power supply cord measured from the entry of the power supply cord to the middle of live pin on the power plug should be over 1.8m.

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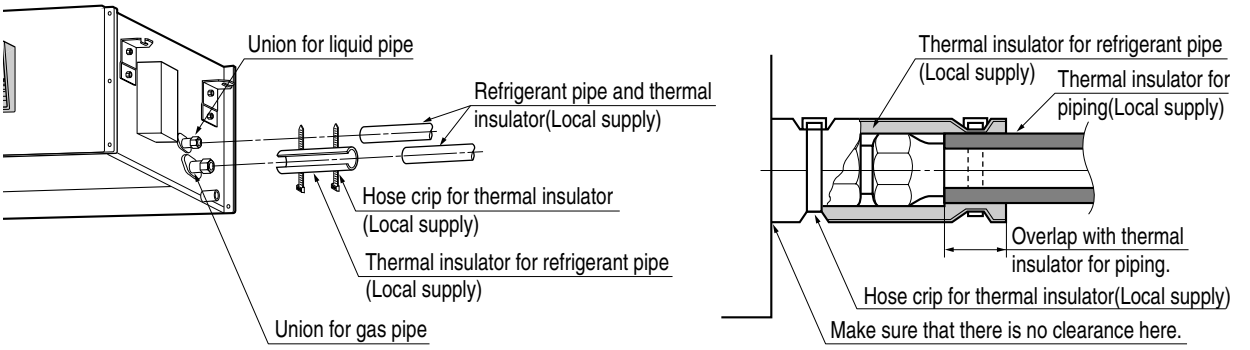
9.4 Insulation

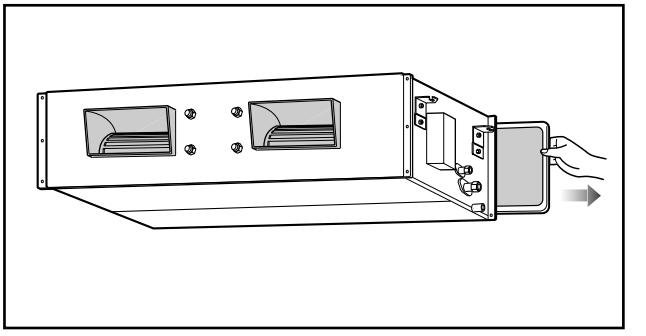
THERMAL INSULATION All thermal insulation must comply with local requirement.

INDOOR UNIT


Union for liquid pipe
Refrigerant pipe and thermal insulator(Local supply)
Hose crip for thermal insulator (Local supply)
Thermal insulator for refrigerant pipe (Local supply)
Union for gas pipe
Thermal insulator for refrigerant pipe (Local supply)
Thermal insulator for piping(Local supply)
Overlap with thermal insulator for piping.
Hose crip for thermal insulator(Local supply)
Make sure that there is no clearance here.

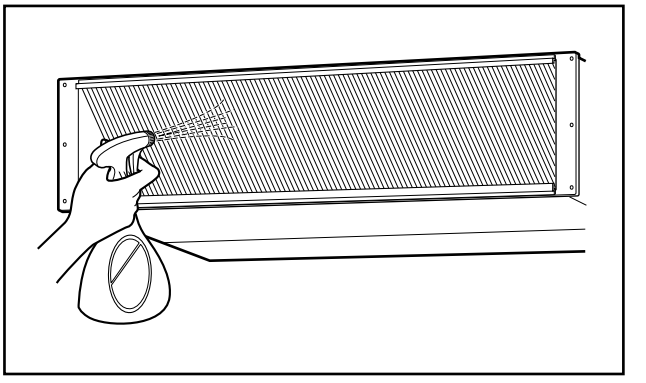
9.5 Checking the Drainage

1. Remove the Air Filter.



2. Check the drainage.

- Spray one or two glasses of water on the evaporator.
- Ensure that water flows to drain hose from indoor unit without any leakage.



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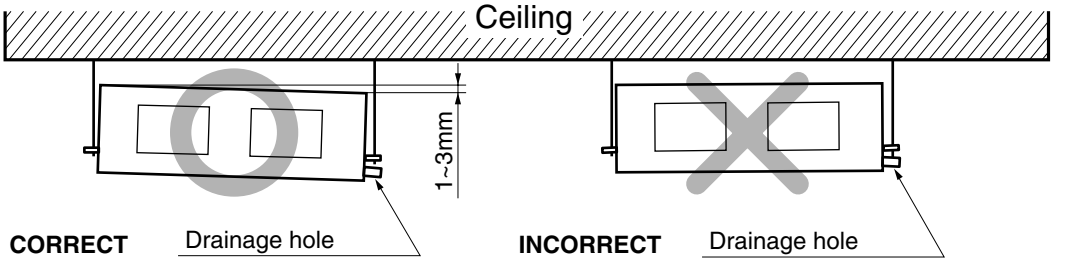
CAUTION

1. **Decline Installation** of indoor unit is very **important for the drain** of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe should be 5mm.

Front of view

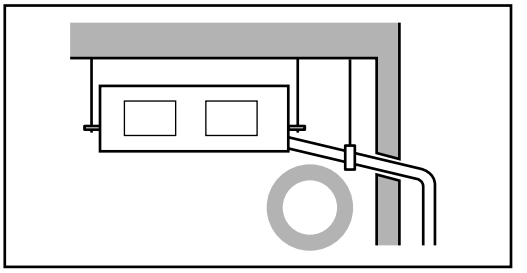
• The unit must be or declined to wards drain hose while installation.



CAUTION FOR GRADIENT OF UNIT AND DRAIN PIPING

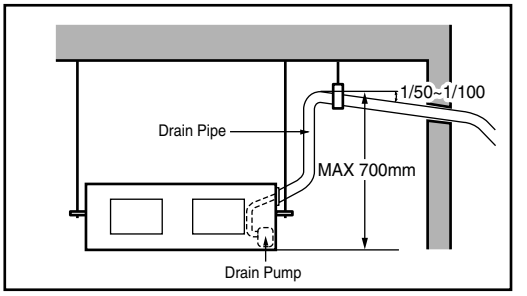
Lay the drain hose with a downware inclination so water will drain out.

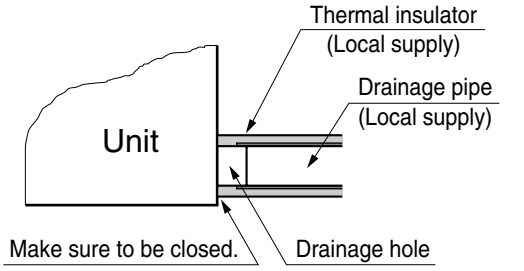
• Alway lay the drain with downward inclination (1/50 to 1/100).
Prevent any upward flow or reverse flow in any part.
• 5mm or thicker formed thermal insulator shall always be provided for the drain pipe.

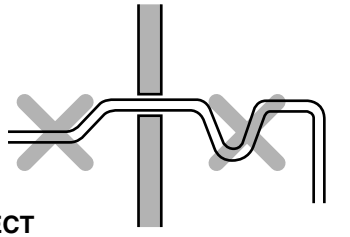


CORRECT

• Install the P-Trap (or U-Trap) to prevent a water leakage caused by the blocking of intake air filter.



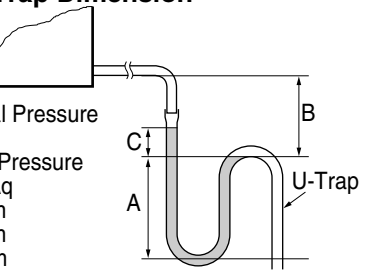




INCORRECT

Applied U-Trap Dimension

A ≥ 70mm
B ≥ 2C
C ≥ 2 x SP
SP = External Pressure (mmAq)
Ex) External Pressure = 10mmAq
A ≥ 70mm
B ≥ 40mm
C ≥ 20mm



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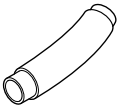
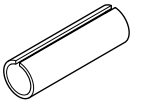
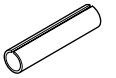
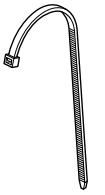
10. Accessories

Standard Accessories

Name	Clamp metal	Drain hose	Insulation for fitting	Clamp	Screws for duct flanges	(Other)
Quantity	1 EA	1 EA	1 set	6 EA	1 set	
Shape			 for gas pipe  for liquid pipe			• Owner's manual • Installation manual • Washers(8 pcs.)

Optional Accessories(For Unit)

No.	Item	Type	Model No.	Component Parts
1	Wireless remote control	With air purifying function	AHWRHS AHWRHD(LCD)	• Wireless remote control : 1EA • Holder : 1EA • Battery : 2EA • Screw : 2EA
2	Plasma air puirifying filter	-	ABPAHH	• Plasm Air Purifier Kit: 1EA • Wired Remote Control: 1EA
3	Zone Control	-	ABZCA	• Factory sypplied-Zone control PCB • Durchased Locally-Damper, Damper Moter, thermostat
4	Drain Pump	-	ABDPG	• Drain Pump Assembly: 1EA
5	Central control	Simple	PQCSA101S0	• Central control • Installation manual
6	PI485 Gateway	For central control	PHNFP14A0	• PCB: 1EA • Installation manual • Wire assembly

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II. Outdoor Units

Introduction 65

Inverter SINGLE A
(AUUW-C / R410A) 67

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Introduction

Outdoor Units - R410A (AUUW-C)

• Models List

Series		Model name	Power supply
MPS Inverter	Heat Pump	AUUW368C	3Ø, 380-415, 50Hz
		AUUW368C1	
		AUUW428C	
		AUUW488C	
		AUUW608C	

• Indoor Unit Matching

LG's SINGLE A system consist of one outdoor unit which can match with three different indoor units as individual system.

The indoor units are ceiling cassette, ceiling concealed duct and ceiling & floor types.

Outdoor unit	Indoor unit	
	Type	Model name
AUUW368C AUUW368C1	Ceiling Cassette	ATNH366DLFC
	Ceiling Suspended	AVNH366KLAC
		AVNH366KLA1
	Ceiling Concealed Duct	ABNH366GLAC
AUUW428C	Ceiling Cassette	ATNH426DLFC
	Ceiling Suspended	AVNH426LLFC
	Ceiling Concealed Duct	ABNH426RLAC
AUUW488C	Ceiling Cassette	ATNH488DLFC
	Ceiling Suspended	AVNH486LLFC
	Ceiling Concealed Duct	ABNH486RLAC
AUUW608C	Ceiling Cassette	ATNH608DLFC
	Ceiling Suspended	AVNH606LLFC
	Ceiling Concealed Duct	ABNH606RLAC

1. Avoid installng air conditioner in such places where cooking oil or iron powder is generated.
2. Avoid places where inflammable gas is generated.
3. Avoid place where noxious gas is generated.
4. Avoid places near high frequency generators.

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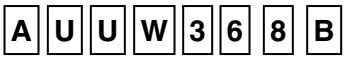
• Model Number Nomenclature



Serial Number

Electric Standard (Phase, Volts, Freq)
6:1Ø,220V~240V,50Hz
8:3Ø,380V~415V,50Hz

Nominal Cooling Capacity in Btu/h

12 : 12,000 Btu/h	60 : 60,000 Btu/h
18 : 18,000 Btu/h	72 : 72,000 Btu/h
24 : 24,000 Btu/h	100 : 100,000 Btu/h
30 : 30,000 Btu/h	
36 : 36,000 Btu/h	
48 : 48,000 Btu/h	

Model Type
W : Inverter Heat Pump
H : Heat Pump

Indicates that this is a
R410A SINGLE A™ **outdoor unit**

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Inverter SINGLE A

Inverter

SINGLE A

(R410A·Outdoor Units)

AUUW-C

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1. Specifications

Nominal Capacity and Nominal Input						
Indoor Units			ABNH366GLAC	ABNH426RLAC	ABNH486RLAC	ABNH606RLAC
Outdoor Units			AUUW368C	AUUW428C	AUUW488C	AUUW608C
Nominal Capacity (Min~Rating~Max)	Cooling	kw	5.98~9.82~10.97	7.21~11.87~13.22	8.44~13.19~15.47	9.50~14.95~16.76
		Btu/h	20,400~33,500~37,400	24,600~40,500~45,100	28,800~45,000~52,800	32,400~51,000~57,200
	Heating	kw	6.68~10.84~12.25	8.62~13.77~15.81	9.50~14.95~16.41	10.20~16.85~17.88
		Btu/h	22,800~37,000~41,800	29,400~47,000~53,900	32,400~51,000~56,000	34,800~57,500~61,000
Nominal Input (Min~Rating~Max)	Cooling	kw	1.84~3.06~3.38	2.17~3.80~3.97	2.86~4.38~4.82	3.07~5.21~5.24
	Heating	kw	1.82~3.00~3.34	2.18~3.80~4.00	2.85~4.14~4.73	3.10~4.52~5.20
Energy label			3.21 / 3.61	3.12 / 3.63	3.01 / 3.61	2.87 / 3.73

Nominal Capacity and Nominal Input						
Indoor Units			ATNH366DLFC	ATNH426DLFC	ATNH486DLFC	ATNH606DLFC
Outdoor Units			AUUW368C	AUUW428C	AUUW488C	AUUW608C
Nominal Capacity (Min~Rating~Max)	Cooling	kw	6.24~9.52~10.85	7.39~11.87~13.55	8.24~12.89~15.34	8.80~14.21~16.13
		Btu/h	21,300~32,500~37,000	25,200~40,500~46,200	28,100~44,000~52,300	30,000~48,500~55,000
	Heating	kw	8.65~10.84~12.02	8.27~13.33~15.16	9.34~14.50~15.84	9.85~15.97~18.06
		Btu/h	29,500~37,000~41,000	28,200~45,500~51,700	31,800~49,500~54,000	33,600~54,500~61,600
Nominal Input (Min~Rating~Max)	Cooling	kw	1.75~2.97~3.75	2.10~3.70~3.85	2.11~4.21~4.70	2.65~4.92~4.85
	Heating	kw	2.32~3.00~3.42	2.04~3.78~3.74	2.07~4.25~4.31	2.62~4.96~4.81
Energy label			3.21 / 3.61	3.21 / 3.53	3.06 / 3.41	2.89 / 3.22

Nominal Capacity and Nominal Input						
Indoor Units			AVNH366KLAC	AVNH426LLAC	AVNH486LLAC	AVNH606LLAC
Outdoor Units			AUUW368C	AUUW428C	AUUW488C	AUUW608C
Nominal Capacity (Min~Rating~Max)	Cooling	kw	5.98~9.52~10.97	7.39~11.87~13.55	8.24~12.90~15.34	8.80 ~ 13.83 ~ 16.13
		Btu/h	20,400~32,500~37,400	25,200~40,500~46,200	28,100~44,000~52,300	30,027 ~ 47,200 ~ 55,038
	Heating	kw	6.68~10.6~12.25	8.27~13.19~15.16	9.34~14.51~15.84	9.85 ~ 15.65 ~ 18.00
		Btu/h	22,800~36,000~41,800	28,200~45,000~51,700	31,800~49,500~54,000	33,610 ~ 53,412 ~ 61,419
Nominal Input (Min~Rating~Max)	Cooling	kw	1.89~3.15~3.78	2.10~3.65~3.85	2.11~4.13~4.70	2.88 ~ 4.80 ~ 5.28
	Heating	kw	1.98~3.29~3.79	2.04~3.65~3.74	2.07~4.22~4.31	3.00 ~ 5.00 ~ 5.50
Energy label			3.03 / 3.2	3.35 / 3.61	3.12 / 3.44	-

Notes:

1. Capacities are based on the following conditions:
   - Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
     - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
   - Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
     - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
   - Piping Length - Interconnecting Piping Length 7.5m(25ft)
     - Level Difference of Zero.
2. Due to our policy of innovation some specifications may be changed without notification.

Conversion Formula	
kW	= Btu/h × 0.0002931
kcal/h	= Btu/h × 0.252
CFM	= CMM × 35.3

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Outdoor Units			**AUUW368C**	**AUUW368C1**	**AUUW428C**	**AUUW488C**	**AUUW608C**
Running current	Cooling	A	4.0 ~ 5.3 ~ 7.8	3.8 ~ 5.0 ~ 7.4	4.5 ~ 6.1 ~ 9.1	4.5 ~ 7.0 ~ 9.6	4.7 ~ 8.0 ~ 10.2
	Heating	A	3.5 ~ 4.3 ~ 7.4	3.5 ~ 4.8 ~ 7.4	4.5 ~ 6.1 ~ 8.0	4.5 ~ 6.4 ~ 8.5	4.2 ~ 7.1 ~ 10.2
Power Supply		Ø,V,Hz	3 / 380 ~ 415 / 50	3 / 380 ~ 415 / 50	3 / 380 ~ 415 / 50	3 / 380 ~ 415 / 50	3 / 380 ~ 415 / 50
Power supply cable (outdoor)		No.* mm^2	4 x 3.5	4 x 3.5	4 x 3.5	4 x 3.5	4 x 3.5
Power and transmission cable (outdoor to indoor)		No.* mm^2	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75
Dimensions	W*H*D	mm(inch)	870*1060*320 (34.3*41.7*12.6)	870*1060*320 (34.3*41.7*12.6)	900*1.165*370 (35.4*45.8*14.5)	900*1.165*370 (35.4*45.8*14.5)	900*1.165*370 (35.4*45.8*14.5)
Net Weight		kg(lbs)	80(176)	80(176)	105(231)	105(231)	105(231)
Compressor (Inverter)	Type		Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary
	Qty x model		1 x 5KD240X	1 x 5KD240X	1 x 5JD420X	1 x 5JD420X	1 x 5JD420X
	Motor type		BLDC	BLDC	BLDC	BLDC	BLDC
	Oil Charge volume	cc	900	900	1300	1300	1300
	Oil Type		FV50S	FV50S	FV50S	FV50S	FV50S
Refrigerant circuit	Charge	g(oz)	2500(88.18)*	2500(88.18)*	4000(141.1)	4000(141.1)	4000(141.1)
	Type		R410A	R410A	R410A	R410A	R410A
	Control		L.E.V	L.E.V	L.E.V	L.E.V	L.E.V
	Max. Piping Length/Elevation	m	50/30	50/30	75/30	75/30	75/30
Heat exchanger	Rows x Column x FPI		2R x 48C x 18	2R x 48C x 18	2R x 52C x 18	2R x52C x 18	2R x 52C x 18
	Defrosting Method		Reversing cycle	Reversing cycle	Reversing cycle	Reversing cycle	Reversing cycle
Fan	Capacitor	µF/Vac	2/400	2/400	-	-	-
	Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
	No. Used / Diameter	EA/ mm(inch)	2/400(15.7)	2/400(15.7)	2/460(18.1)	2/460(18.1)	2/460(18.1)
	Discharge direction	Side / Top	Side Discharge	Side Discharge	Side Discharge	Side Discharge	Side Discharge
	Air Flow Rate	CMM(CFM)	32*2 (1130*2)	32*2 (1130*2)	53*2 (1872*2)	53*2 (1872*2)	53*2 (1872*2)
Noise Level(H/L)	Sound Press,1m	dB(A)+3	51	51	53	54	55
Piping connections	Liquid (Ø)	mm (inch)	6.35 (1/4)	6.35 (1/4)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
	Gas (Ø)	mm (inch)	15.88 (5/8)	15.88 (5/8)	19.05 (3/4)	19.05 (3/4)	19.05 (3/4)
Max. Interunit Piping Length	Total Piping(Main+Total Branch)	m	50	50	75	75	75
	Main Piping	m	50	50	75	75	75
Max. elavation	Indoor Unit~Outdoor Unit	m	30	30	30	30	30

Notes:

1. Capacities are based on the following conditions:
   - Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
     - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
   - Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
     - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
   - Piping Length - Interconnecting Piping Length 7.5m(25ft)
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Conversion Formula	
kW	= Btu/h × 0.0002931
kcal/h	= Btu/h × 0.252
CFM	= CMM × 35.3

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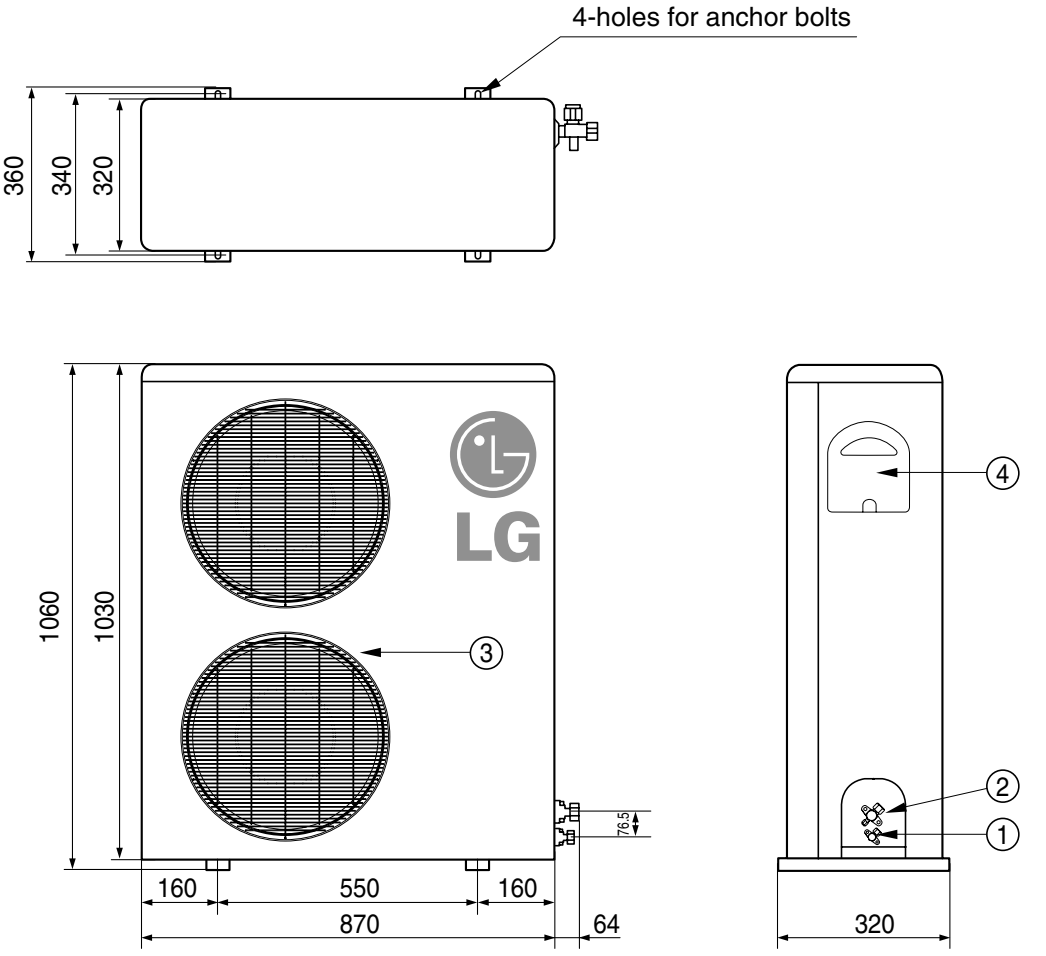
2. Dimensional Drawings

AUUW368C/ AUUW368C1



(Unit: mm)

Number	Name	Descripition
1	Liquid side service valve(mm)	Ø6.35
2	Gas side service valve(mm)	Ø15.88
3	Air discharge grill	
4	Control Cover	

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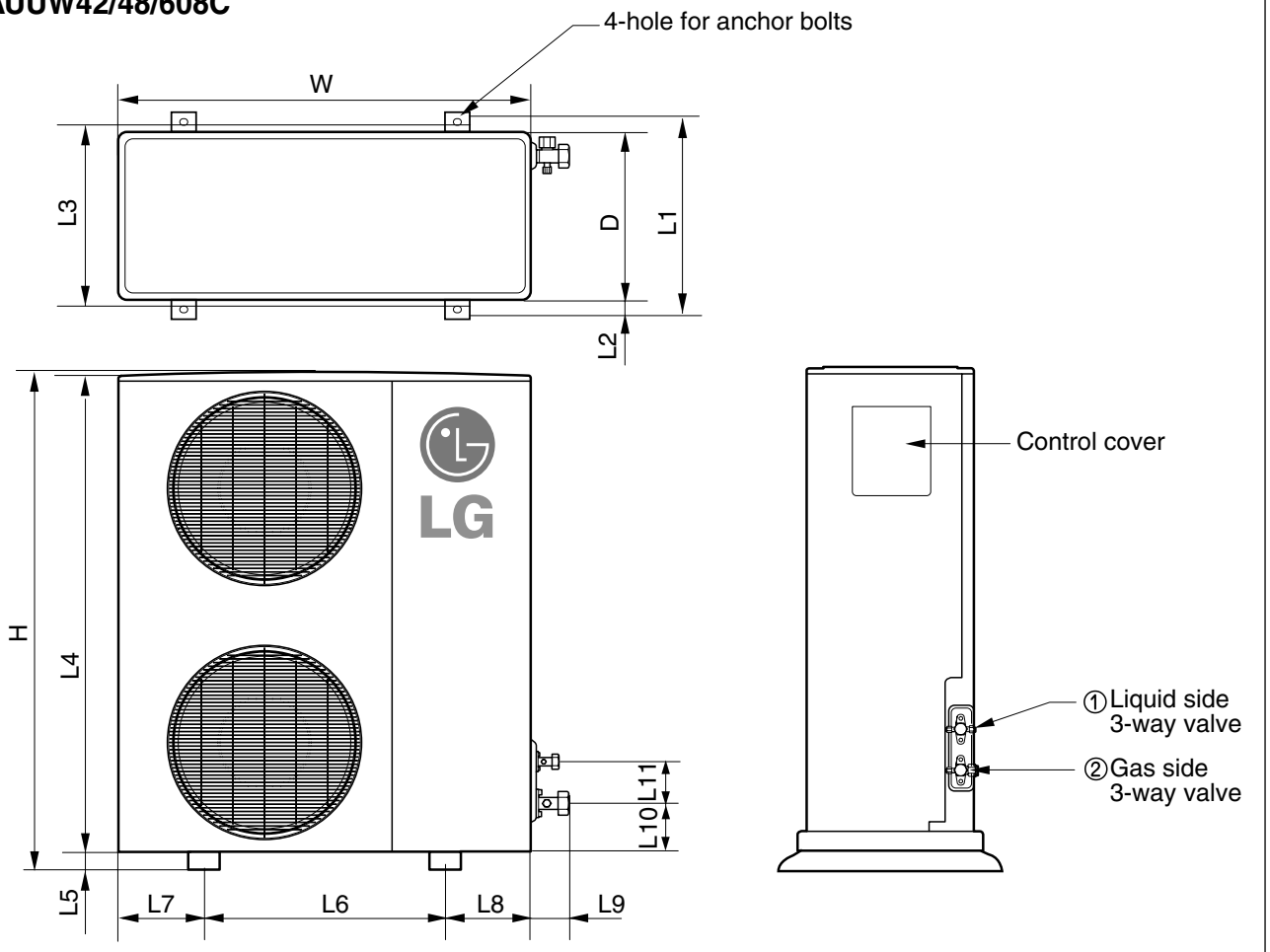
AUUW42/48/608C



Dimensions \ Model		AUUW42/48/608C
W	mm	900
H	mm	1,165
D	mm	370
L1	mm	460
L2	mm	45
L3	mm	410
L4	mm	1,135
L5	mm	30
L6	mm	550
L7	mm	175
L8	mm	175
L9	mm	112
L10	mm	120
L11	mm	83
①	mm	Ø9.52
②	mm	Ø19.05

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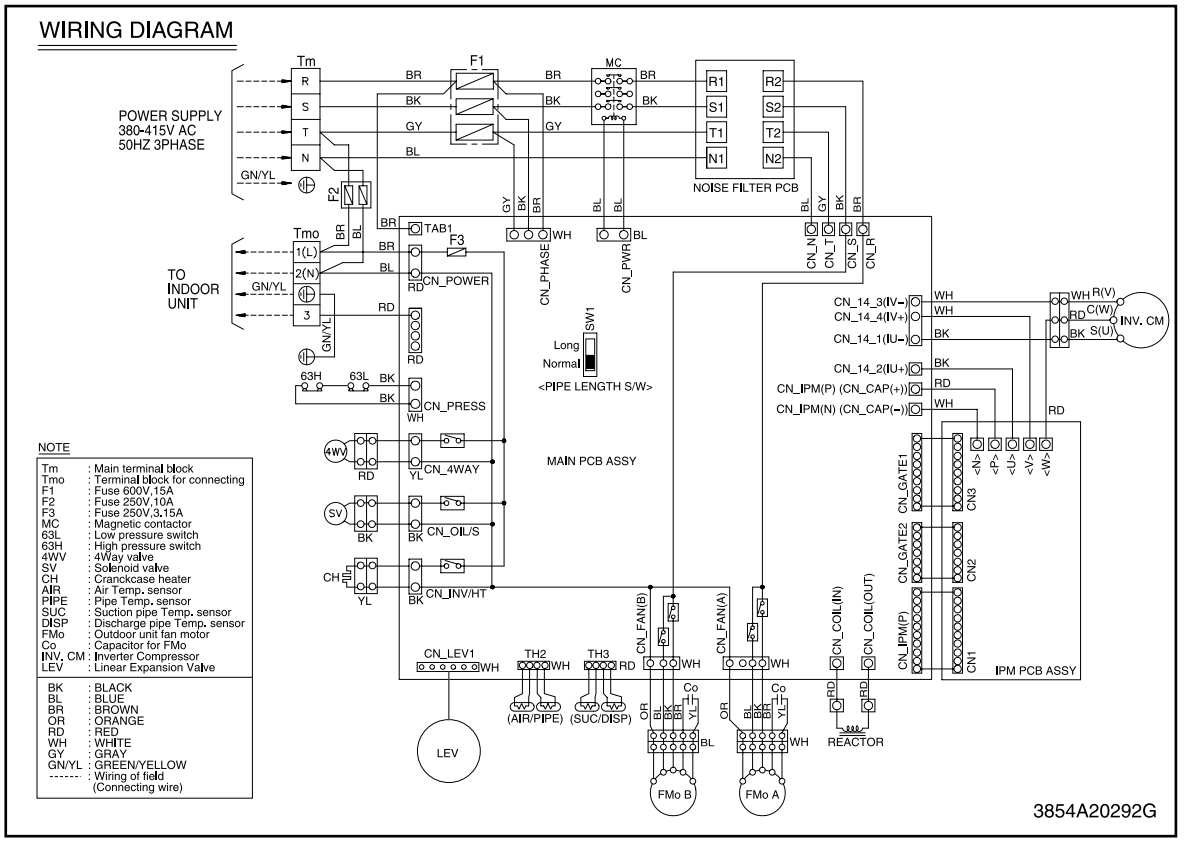
3. Wiring Diagrams

AUUW368C/ AUUW368C1



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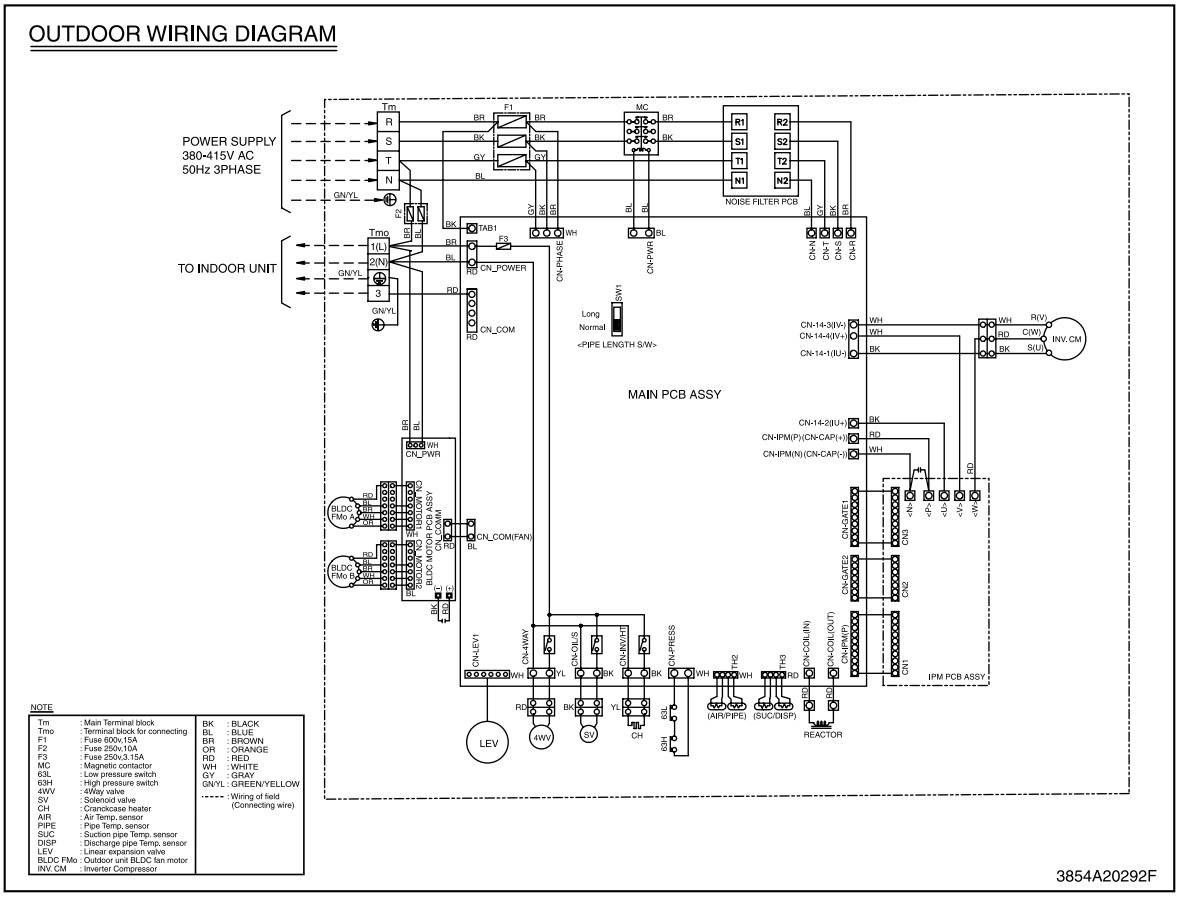
AUUW42/48/608C



NOTE

Tm : Main Terminal block	BK : BLACK
Tmo : Terminal block for connecting	BL : BLUE
F1 : Fuse 600v,15A	BR : BROWN
F2 : Fuse 250v,10A	OR : ORANGE
F3 : Fuse 250v,3.15A	RD : RED
MC : Magnetic contactor	WH : WHITE
63L : Low pressure switch	GY : GRAY
63H : High pressure switch	GN/YL : GREEN/YELLOW
4WV : 4Way valve	----- : Wiring of field (Connecting wire)
SV : Solenoid valve	
CH : Crankcase heater	
AIR : Air Temp. sensor	
PIPE : Pipe Temp. sensor	
SUC : Suction pipe Temp. sensor	
DISP : Discharge pipe Temp. sensor	
LEV : Linear expansion valve	
BLDC FMo : Outdoor unit BLDC fan motor	
INV.CM : Inverter Compressor	

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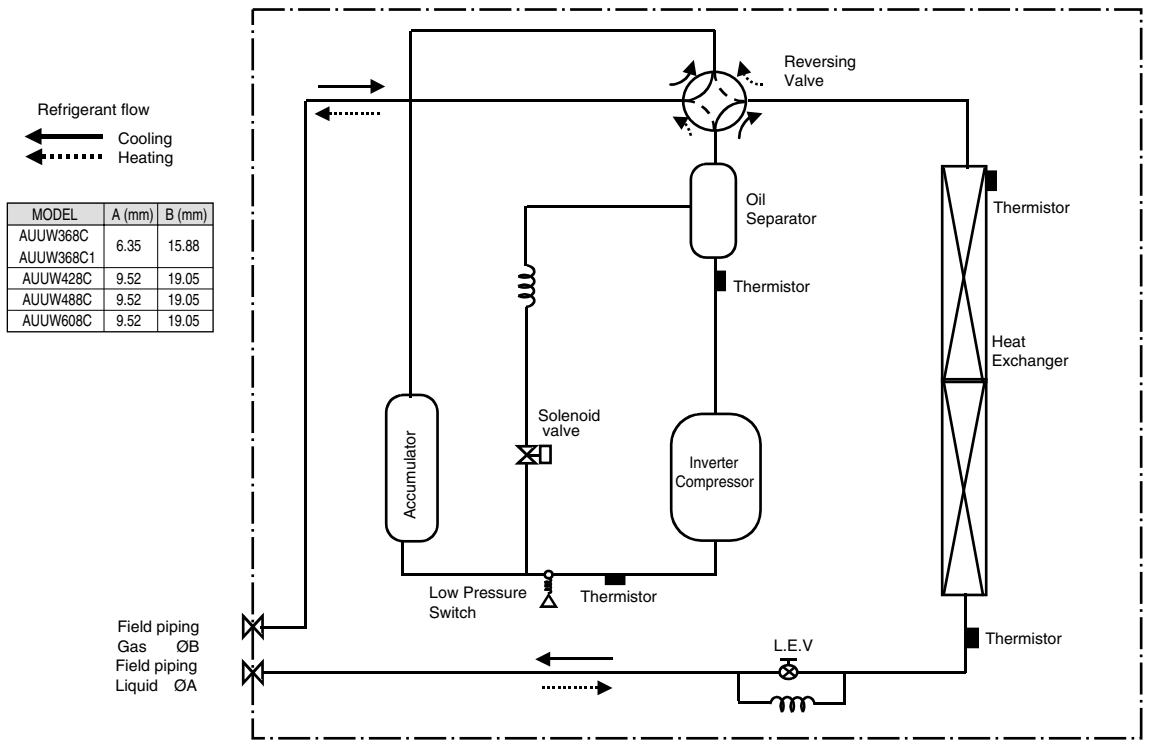
4. Piping Diagram

AUUW36/42/48/608C /368C1



MODEL	A (mm)	B (mm)
AUUW368C AUUW368C1	6.35	15.88
AUUW428C	9.52	19.05
AUUW488C	9.52	19.05
AUUW608C	9.52	19.05

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5. Electric Characteristics

Unit					Power		Compressor		OFM	
Model	Type	Hz	Voltage	Voltage range	MCA	MOP	MSC	RLA	kW	FLA
AUUW368C1 [UU37WE] AUUW368C [UU37W UEC]	inverter	50	380~415	Min : 352 Maxi :457	7.76	21.1	14	7	0.13	1.4
AUUW428C [UU43W UHC]					9.12	26.0	14	7	0.18	1.5
AUUW488C [UU49W UHC]					10.99	29.7	14	7	0.18	1.5
AUUW608C [UU61W UHC]					11.00	35.0	14	7	0.18	1.5

Notes :

1. Voltage range
   Voltage supplied to the unit terminals should be within the minimum and maximum range
2. Maximum allowable voltage unbalance between phase is 2 %
3. MCA / MOP
   MCA = (1.25 x Load1) + Load2 + Load3
   MOP = (2.25 x Load1) + Load2 + Load3
   - Load1 : Rated running current of largest motor (compressor or other motor)
   - Load2 : sum of current for all other motors
   - Load3 : any other load rated 1.0A or more
4. Select wire spec. based on the MCA
5. Select proper circuit breaker as given below
   MCA < circuit breaker ≤ MOP
6. Recommended circuit breaker is ELCB (Earth Leakage circuit breaker)
7. MSC & RLA are measured as the compressor only test condition.
8. MSC values
   14 : MSC of (inv. comp.)
9. RLA is measured during each individual compressor test condition.
   Ex) *7.0* : RLA of (inv. comp.)
10. OFM is measured as the outdoor unit test condition

(Example) Selection of proper circuit breaker

① Model : AUUH368C
   - Rated running current : 5.09 A (refer to spec. sheet)

② MCA = (1.25 x Load1) + Load2 + Load3
   = (1.25 x 8.75) + 0 + (1.4) = 7.76 A

③ MOP = (2.25 x Load1) + Load2 + Load3
   = (2.25 x 8.75) + 0 + (1.4) = 12.84 A
   → Finally select circuit breaker 20A

MCA : Minimum Circuit Amperes (A)
MOP : Maximum rating over current protective device
MSC : Maximum Starting Current
RLA : Rated Load Amperes (A)
OFM : Outdoor Fan Motor
kW : Fan Motor rated output (kW)
FLA : Full Load Amperes (A)

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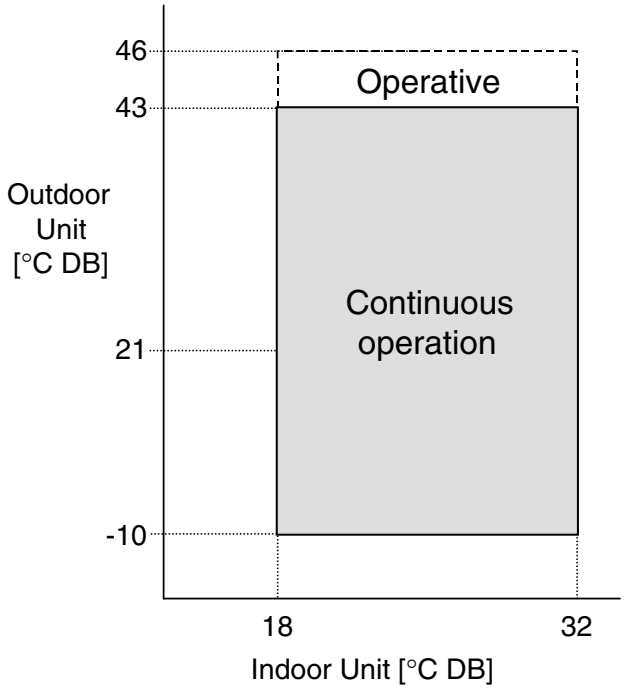
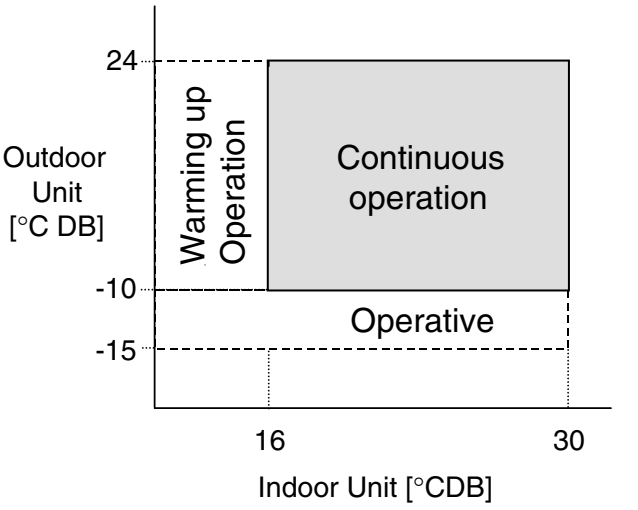
6. Operation Range

Cooling



❉ Although low ambient kit is installed, in case outdoor temperature goes below 0°C, the cooling capacity can be dropped and operation characteristics can be slightly different.

Heating



Operative:
Intermittent operation due to the operation conditions (indoor/outdoor temperature humidity, and load) can cause
the heating capacity to drop.

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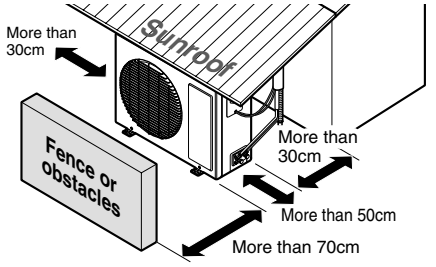
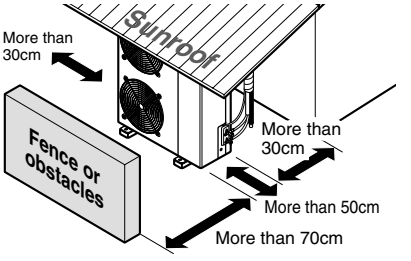
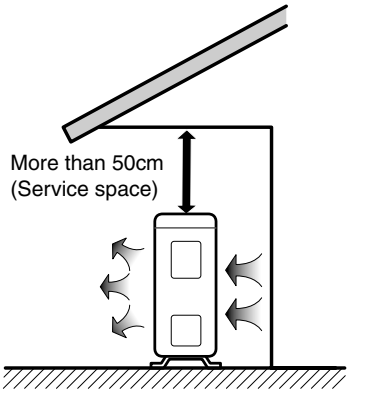
7. Installation

7.1 Select the best location

- If a roof is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are minimum.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.
- Rooftop Installations : If the outdoor unit is installed on a roof structure, be sure to level the unit. Ensure the roof structure and anchoring method are adequate for the unit location. Consult local codes regarding rooftop mounting.
- Ensure that the space around the back is more than 30cm and sides is more than 30cm. The front of the unit should have more than 70cm of space.

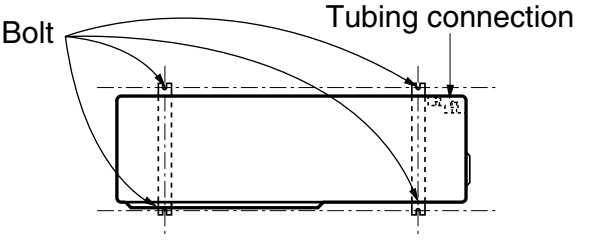






7.2 Settlement of outdoor unit

- Anchor the outdoor unit with a bolt and nut(ø10mm) tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the hose, secure the unit with an anti-vibration rubber.



⚠ Caution:

Be very careful to carry product.

- Do not have only one person carry product if it is more than 20 kg.
- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut in your hands.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in outdoor unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make outdoor unit unstable, resulting in a fall of it.

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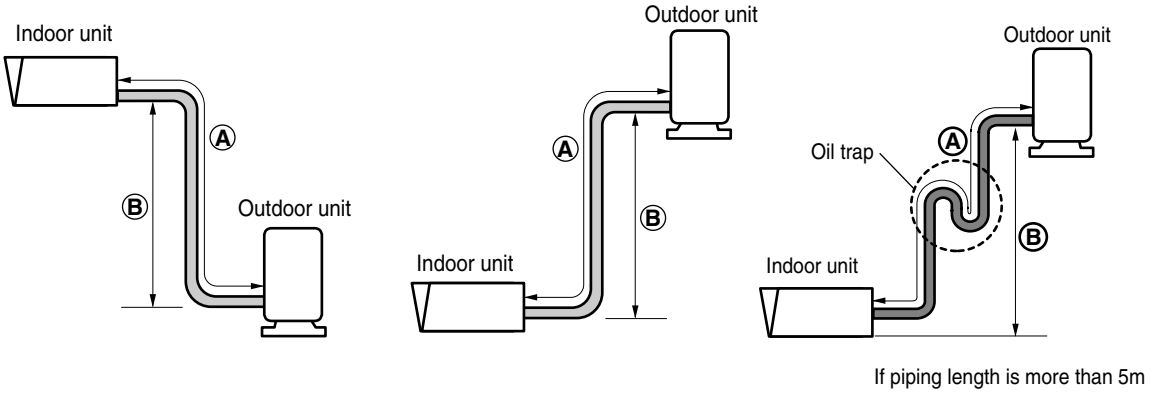
7.3 Piping length and the elevation

Capacity	Pipe Size (Diameter:Ø)		Length A(m)		Elevation B(m)		*Additional refrigerant(g/m)
	Gas	Liquid	Standard	Max.	Standard	Max.	
36k Btu/h	5/8"(15.88mm)	1/4"(6.35mm)	7.5	50	5	30	35
42k Btu/h	3/4"(19.05mm)	3/8"(9.52mm)	7.5	75	5	30	50
48k Btu/h	3/4"(19.05mm)	3/8"(9.52mm)	7.5	75	5	30	50
60k Btu/h	3/4"(19.05mm)	3/8"(9.52mm)	7.5	75	5	30	50



If piping length is more than 5m

CAUTION:

- **Rated performance for refrigerant line length of:7.5m**
- **Capacity is based on standard length and maximum allowance length is on the basis of reliability.**
- **Improper refrigerant charge may result in abnormal cycle.**
- **Oil trap should be installed every 10 meters.**

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III. Troubleshooting Guide

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1. Self-diagnosis Function

■ **Error Indicator**

- The function is to self-diagnosis air conditioner and express the troubles identification if there is any trouble.
- Error mark is ON/OFF for the operation LED of evaporator body in the same manner as the following table.
- If more than two troubles occur simultaneously, primarily the highest trouble for error code is expressed.
- After error occurrence, if error is released, error LED is also released simultaneously.
- To operate again on the occurrence of error code, be sure to turn off the power and then turn on.
- Having or not of error code is different from Model.

Indoor Error

Error code	Description	INV TPS	LED 1 (Red)	LED 2 (Green)	Indoor Status
00	No Error	●			ON
01	Indoor Room themistor error	●		1time ◑	OFF
02	Indoor in-piping sensor error	●		2times ◑	OFF
03	Remote controller error	●		3times ◑	OFF
04	Drain Pump error	●		4times ◑	OFF
05	Communcation error between in and out	●		5times ◑	OFF
06	Indoor Out-Piping sensor error	●		6times ◑	OFF
07	Differnt mode operation	●		7times ◑	OFF

Outdoor Error

Error Code	Description	INV TPS	LED 1 (Red)	LED 2 (Green)	Indoor Status
21	DC Peak (IPM Fault)	●	2times ◑	1times ◑	Off
22	CT 2(Max CT)	●	2times ◑	2times ◑	Off
23	DC Link Low Volt.	●	2times ◑	3times ◑	Off
24	L/H press SW	●	2times ◑	4times ◑	Off
25	Low voltage / Over voltage	●	2times ◑	5times ◑	Off
26	DC Comp Position Error	●	2times ◑	6times ◑	Off
32	D-Pipe High (INV)	●	3times ◑	2times ◑	Off
33	D-Pipe High (Normal)	●	3times ◑	3times ◑	Off
40	CT Sensor (Open / Short)	●	4times ◑	O	Off
41	INV. D-PipeTh Error (Open / Short)	●	4times ◑	1times ◑	Off
44	Outdoor Air Th Error (Open / Short)	●	4times ◑	4times ◑	Off
45	Cond. Pipe Error (Open / Short)	●	4times ◑	5times ◑	Off
46	Suction Pipe Error (Open / Short)	●	4times ◑	6times ◑	Off
47	Const D-PipeTh Error (Open / Short)	●	4times ◑	7times ◑	Off
51	Over Capacity	●	5times ◑	1times ◑	Off
52	Comm. Error(Main micon <-> Sub micom)	●	5times ◑	2times ◑	Off
53	Comm. Error(Indoor <-> Outdoor)	●	5times ◑	3times ◑	Off
54	Outdoor 3 phase power supply Reverse phase / phase omission	●	5times ◑	4times ◑	Off
60	EEPROM Check Sum Error	●	6times ◑	O	Off
61	Cond. Pipe High	●	6times ◑	1times ◑	Off
62	Heatsink High	●	6times ◑	2times ◑	Off
63	Cond. Pipe Low	●	6times ◑	3times ◑	Off
65	Heatsink Th Error (Open/Short)	●	6times ◑	5times ◑	Off
67	Outdoor BLDC Fan Lock	●	6times ◑	7times ◑	Off
105	Comm. Error(Main board <->Fan board)	●	10times ◑	5times ◑	Off

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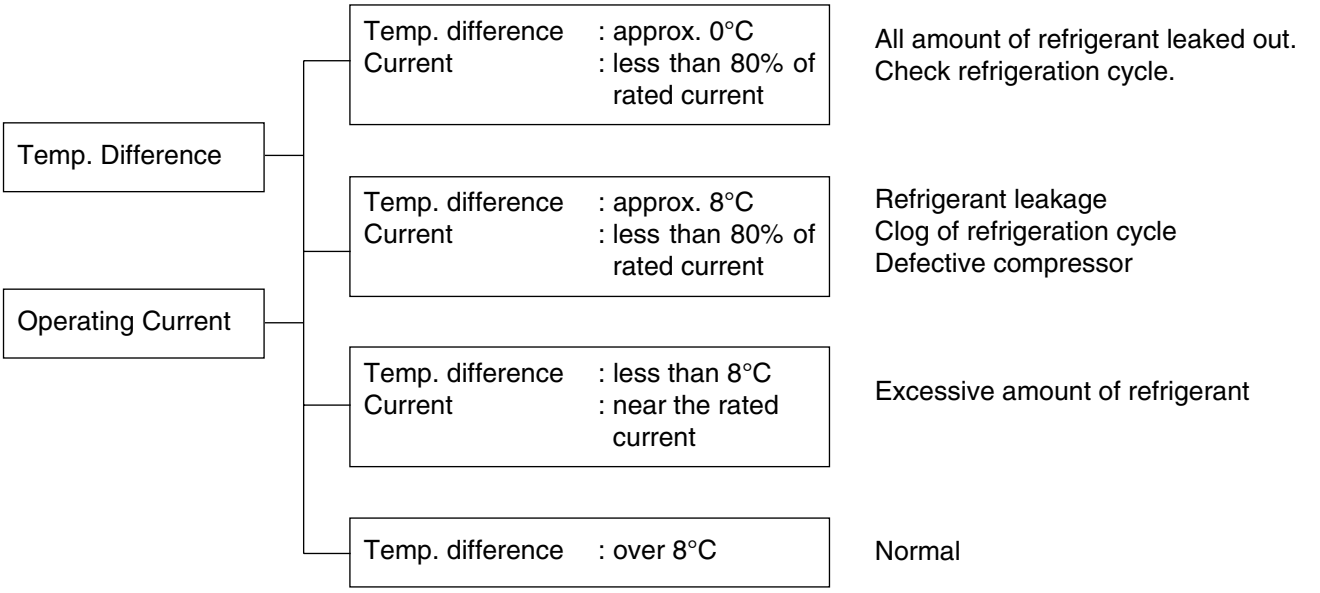
2. Cycle Troubleshooting Guide

Trouble analysis

1. Check temperature difference between intake and discharge air, and operating current.


Temp. Difference
Operating Current
Temp. difference : approx. 0°C
Current : less than 80% of rated current
All amount of refrigerant leaked out.
Check refrigeration cycle.
Temp. difference : approx. 8°C
Current : less than 80% of rated current
Refrigerant leakage
Clog of refrigeration cycle
Defective compressor
Temp. difference : less than 8°C
Current : near the rated current
Excessive amount of refrigerant
Temp. difference : over 8°C
Normal

Notice:
Temperature difference between intake and discharge air depends on room air humidity. When the room air humidity is relatively higher, temperature difference is smaller. When the room air humidity is relatively lower temperature difference is larger.

2. Check temperature and pressure of refrigeration cycle.

Suction pressure (Compared with the normal value)	Temperature (Compared with the normal value)	Cause of Trouble	Description
Higher	High	Defective compressor	Current is low.
	Normal	Excessive amount of refrigerant	High pressure does not quickly rise at the beginning of operation.
Lower	Higher	Insufficient amount of refrigerant(Leakage) Clogging	Current is low.

Notice:
1. The suction pressure is usually 4.5~6.0 kg/cm²G at normal condition.
2. The temperature can be measured by attaching the thermometer to the low pressure tubing and wrap it with putty.

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3. Electronic Parts Troubleshooting Guide

※ Refer to electronic contorol device drawing & schematic diagram.

Trouble 1 The Product doesn't operate at all.

Turn off the main power and wait until LED on outdoor PCB is off.

⇩

Turn on the main power again.

⇩

Does "Beeping" sound is made from the indoor unit?

NO ⇩

Check the voltage of power(AC220V/AC240V, 50Hz).

- The voltage of main power.
- The voltage applied to the unit.
- The connecting method of Indoor/Outdoor connecting cable (each color)
- The P.W.B. Ass'y

(Fuse, Noise Filter, Power Transformer, IC01D, IC02D, etc.)

YES ⇩

- Primarily, the operating condition of Micom is O.K.

⇩

- Check CN-DISP1

The operation check of the P.C.B. Ass'y		
Procedure	**Specification**	**Remedy**
1) The input voltage of power transformer.	1) AC230V ± 30V : Check the rated voltage	1) Replace power transfomer.
2) The output voltage of power transformer.	2) 14V ± 3V	2) Replace power transfomer.
3) IC01D(7812)	3) DC12V	3) Replace IC01D.
4) IC02D(7805)	4) DC5V	4) Replace IC02D.
5) IC01A(KIA7036)	5) The voltage of micom pin 29 : DC4.5V↑	5) Replace IC01A.

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Trouble 2 Product doesn't operate with the remote controller.

Turn on main power.

While the compressor has been stopped, the compressor does not operate owing to the delaying function for 3 minutes after stopped.

When the compressor stopped Indoor Fan is driven by a low speed.
At this point the wind speed is not controlled by the remote controller.
(When operated in the Sleeping Mode, the wind speed is set to the low speed as force.)

Caused by the remote controller.

When the mark ( ) is displayed in LCD screen, replace battery.

When the detect switch (double key) inside the remote controller door is fault, it is impossible to operate temperature regulating(▲ / ▼) and wind speed selecting.

Check the Display PWB Ass'y

Caused by other parts except the remote controller

Check the contact of CN-DISP 1 connector

Check DISP PWB Ass'y
-Voltage between CN1 ① - ⑦ : DC +5V

• Check receiver ass'y

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Trouble 3 The Compressor/Outdoor Fan are don't operate

Turn on the main power.

↓

Operate Cooling Mode by setting the disired temperature of the remote controller is less than one of the Indoor temperature by 1°C at least.

↓

When in air circulation mode, compressor/outdoor fan is stopped.

↓

Check the sensor for Indoor temperature is attatched as close as to be effected by the themperature of Heat Exchange (EVA.)

↓

When the sensor circuit for Indoor temperature and connector are in bad Connection or are not engaged, Compressor/Outdoor fan is stopped.
- Check the related circuit of R02H(12.1K), R01H(1K), R04H(6.2K), R03H(1K), C01H(102), C02H(102), Micom(pin No. ,).
- Check the Indoor temperature sensor is disconnected or not (about 10K at 25°C).

↓

Check the Relay(RY-PWR, RY-START) for driving Compressor.

- Check the voltage between CN-CP(L) and CN-CP(N) of terminal to connect the Outdoor (About AC220V / 240V).
- Check the related circuit of relay in Outdoor PCB Ass'y.

Check Point	Comp. ON	Comp. OFF
Between Micom(No. 71) and GND	DC 5V	DC 0V
Between IC01M(No. 11) and GND	DC 1V↓	DC 12V

↓

Turn off main power.

↓

Check the electrical wiring diagram of Outdoor side.
Check the open or short of connecting wires between Indoor and Outdoor.

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Trouble 4 When indoor Fan does not operate.

Turn off main power.

↓

Check the connection of CN-FAN.

↓

Check the Fan Motor.

↓

Check the Fuse(AC250V, T2A).

↓

Check the related circuit of indoor Fan Motor.

- The pin No. ㊳ of micom and the part for driving SSR.(Q01M)
- Check the related pattern.
- Check the SSR.
  - SSR Open: Indoor Fan Motor never operate.
  - SSR short: Indoor Fan Motor always operates in case of ON or OFF.

↓

Turn on the main power

↓

Check the SSR high speed operation by remote control.
(the Indoor Fan Motor is connected)

The voltage of Pin No 1(orange) and 3(black) of CN-FAN.

↓

About AC 160V over	About AC 50V over
↓	↓
SSR is not damaged	Check SSR

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Trouble 5 When the louver does not operate.

- Confirm that the vertical louver is normally geared with the shaft of Stepping Motor.
- If the regular torque is detected when rotating the vertical louver with hands ⇒ Normal

⇩

- Check the connecting condition of CN-U/D or CN0L/R Connector
- Check the soldering condition(on PCB) of CN-U/D or CN0L/R Connector

⇩

Check the operating circuit of the vertical louver

- Confirm that there is DC +12V between pin ① of CN-U/D, CN0L/R and GND.
- Confirm that there is a soldering short at following terminals.
  - Between ①, ②, ③ and ④ of MICOM
  - Between ⑰, ⑱, ⑲ and ⑳ of MICOM
  - Between ④, ⑤, ⑥ and ⑦ of IC01M
  - Between ⑤, ⑥, ⑦ and ⑧ of IC01M

⇩

If there are no problems after above checks.

- Confirm the assembly condition that are catching and interfering parts in the link of the vertical louver

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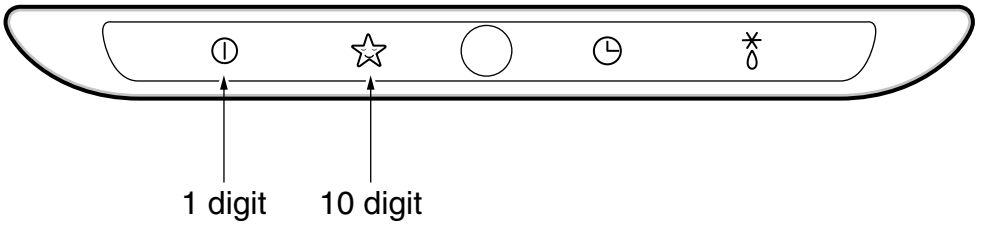
4. General Information

■ **Error Indicator (Indoor)**

- The function is to self-diagnosis air conditioner and express the troubles if there is any trouble.
- Error mark is displayed on display window of indoor units and wired-remote controller, and LED of outdoor unit control board.
- If more than two troubles occur simultaneously, lower number of error code is first displayed.
- After error occurs, if error is released, error LED is also released simultaneously.



■ **Indoor Error**

Error code	Contents	Case of error	Indoor Status
01	Air sensor (open/short)	Open / Short	Off
02	Inlet pipe sensor	Open / Short	Off
03	Communication(Indoor ↔ Wired R/Control)	Communication Poorly	Off
04	Drain pump/ Float switch	Float switch Open	Off
05	Communication(Indoor ↔ Outdoor)	Communication Poorly	Off
06	Outlet pipe sensor	Open / Short	Off
07	Different operation mode	Different operation mode	Off

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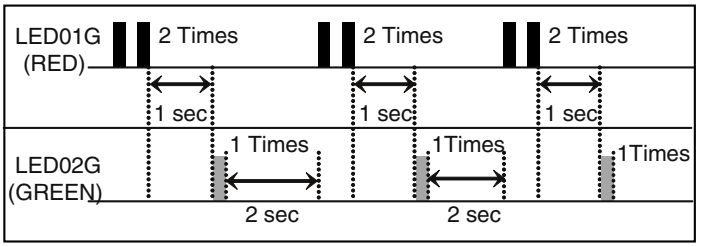
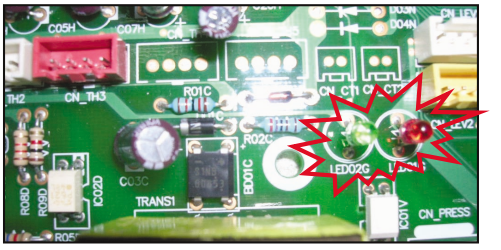
■ Error Indicator (Outdoor)

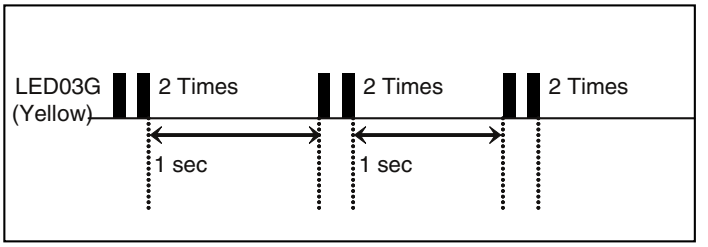
Outdoor Error
Ex) Error 21 (DC Peack)

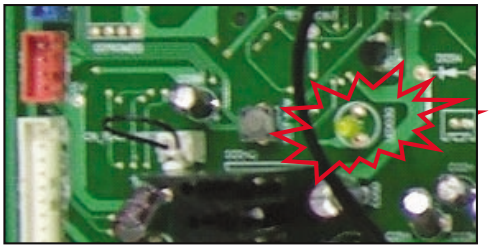




Error code	Descriotion	LED01G (Red)	LED02G (Green)	Indoor Status
21	DC Peak (IPM Fault)	2 times ◑	1 time ◑	Off
22	CT 2(Max CT)	2 times ◑	2 times ◑	Off
23	DC Link Low Volt.	2 times ◑	3 times ◑	Off
24	L/H press SW	2 times ◑	4 times ◑	Off
25	Low voltage / Over voltage	2 times ◑	5 times ◑	Off
-	-	-	-	-
65	Heatsink Th Error (Open/Short)	6 times ◑	5 times ◑	Off
67	Outdoor BLDC Fan Lock	6 times ◑	7 times ◑	Off
105	Comm. Error (Main board <->Fan board)	10 times ◑	5 times ◑	Off

Outdoor Error
Ex) Error 26(DC Comp position Error)





Error code	Descriotion	LED03G (Yellow)	Error Display Time
21	DC PEAK (IPM Fault)	1 times ◑	25 sec
26	DC Comp position Error (No Position / Locking) Error	2 times ◑	25 sec
52	Comm. Error (Main micon <-> Sub micom)	3 times ◑	25 sec
23	DC Link Low voltage Error	5 times ◑	25 sec
40	CT Sensor Open/Short Error	6 times ◑	-
60	A/D Option Error	7 times ◑	-
29	Comp over current Error	8 times ◑	25 sec

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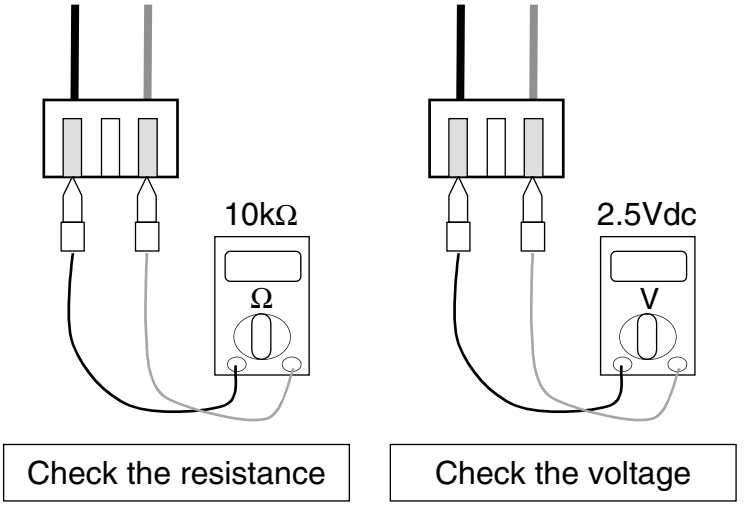
1) Troubleshooting CH01, CH02, CH06

Display code	Title	Cause of error	Check point & Normal condition
01	Indoor air sensor	• Open / Short • Soldered poorly • Internal circuit error	Normal resistor : 10KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)
02	Indoor inlet pipe sensor	• Open / Short • Soldered poorly • Internal circuit error	Normal resistor : 5KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)
06	Indoor outlet pipe sensor	• Open / Short • Soldered poorly • Internal circuit error	Normal resistor : 5KΩ/ at 25°C (Unplugged) Normal voltage : 2.5Vdc / at 25°C (plugged)



Check Point

1. Unplug the sensor on Indoor unit PCB.
2. Estimate the resistance of each sensor.
3. If the resistance of the sensor is 10KΩ/ 5KΩ at 25°C, then sensor is normal.
4. If the resistance of the sensor is 0 KΩ or ∞, then sensor is abnormal. → Change the sensor.
5. Plug the sensor on Indoor unit PCB and Power ON.
6. Estimate the voltage of each sensor.
7. If the voltage of the sensor is 2.5Vdc at 25°C, then sensor is normal.
8. If the resistance of the sensor is 0 or 5Vdc, then sensor is abnormal. → Repair or Change the PCB.

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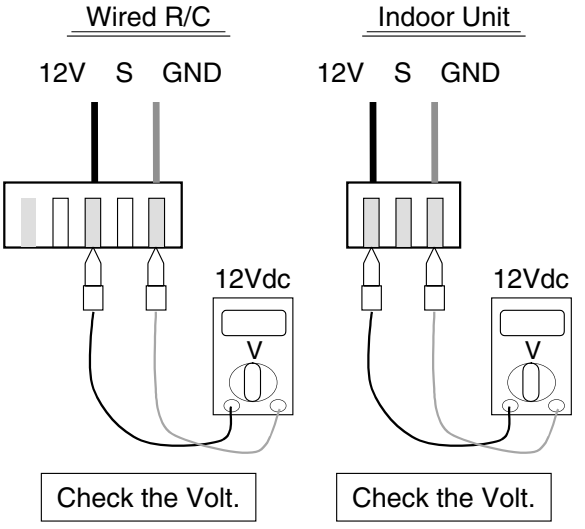
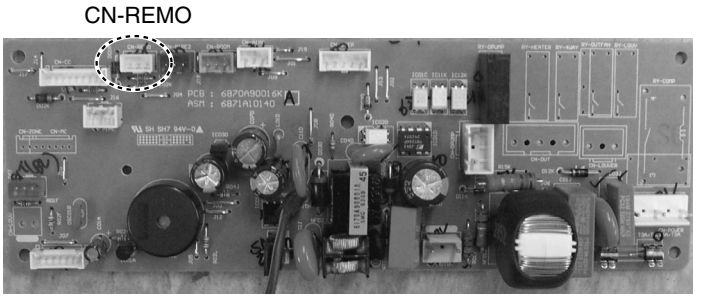
2) Troubleshooting CH03

Display code	Title	Cause of error	Check point & Normal condition
03	Communication Wired R/C	• Open / Short • Wrong connection	• Connection of wire • Main PCB Volt. DC12V • Noise interference





Check Point

1. Check the wire connection. (Open / Short) → Repair the connection
2. Check the soldering state of connector. (Soldered poorly) → Repair or Change the PCB.
3. Check the volt. Of main PCB power source. (DC 12V, DC 5V) → Repair or Change the main PCB.
4. Check the installation of wired remote controller. (Noise interference) → Adjust the state of installation

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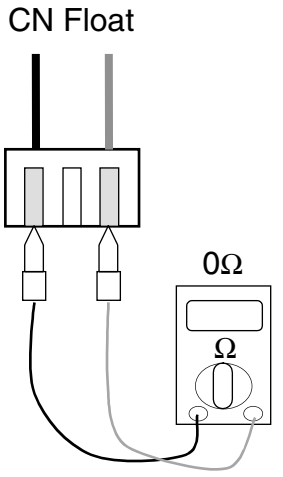
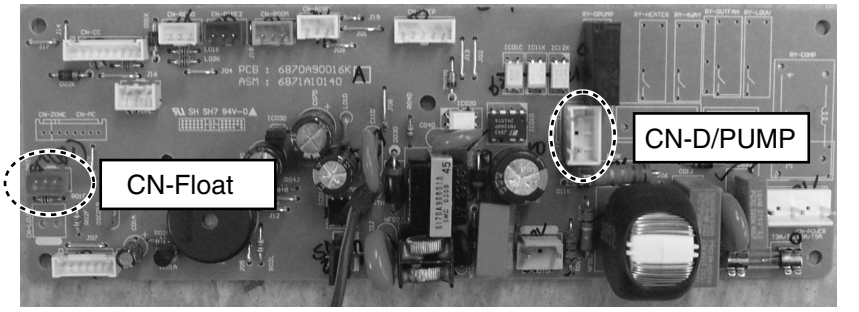
3) Troubleshooting CH04

Display code	Title	Cause of error	Check point & Normal condition
04	Drain pump / Float switch	• Float switch Open. (Normal : short)	• The connection of wire(Drain pump/ Float switch) • Drain pump power input. (220V) • Drain tube installation. • Indoor unit installation. (Inclination)



Check the resistance



Check Point

1. Check the wire connection. (Open, Soldered poorly) → Repair the connection or change the PCB.
2. Check the resistance of float switch (Abnormal : Open, Normal : short) → Check the float switch.
3. Check the level of water
4. Check the volt. Of Drain pump power supply. (AC 230V) → Repair or Change the main PCB.

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4) Troubleshooting CH05, CH53

Display code	Title	Cause of error	Check point & Normal condition
05 / 53	Title Communication (Indoor → Outdoor)	• Communication poorly	• Power input AC 220V. (Outdoor, Indoor) • The connector for transmission is disconnected. • The connecting wires are misconnected. • The communication line is shorted at GND. • Transmission circuit of outdoor PCB is abnormal. • Transmission circuit of indoor PCB is abnormal.

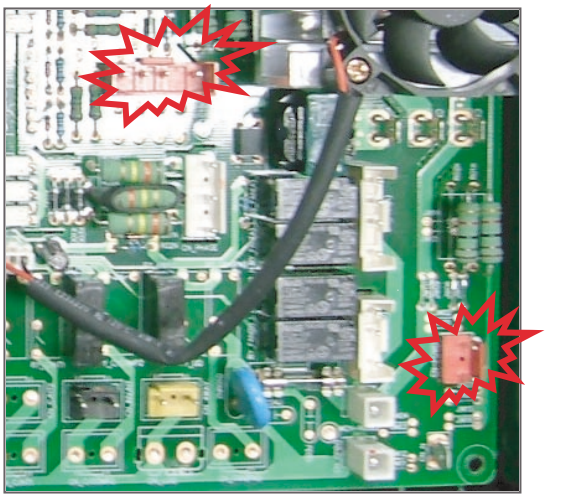
Check Point

1. Check the input power AC230V. (Outdoor, Indoor unit)
2. Check the communication wires are correctly connected.
   Adjust the connection of wire Confirm the wire of "Live", "Neutral"
3. Check the resistance between communication line and GND.
   (Normal : Over 2MΩ)
4. Check the connector for communication is correctly connected.
5. If one indoor unit is operated normally, outdoor PCB is no problem.
   Check the another indoor unit.

* CH05 is displayed at indoor unit, CH53 is displayed at outdoor unit.

6. If all indoor unit is displayed CH05 but outdoor PCB not display

   CH53 : Check the CN_COM and CN_POWER is correctly connected.



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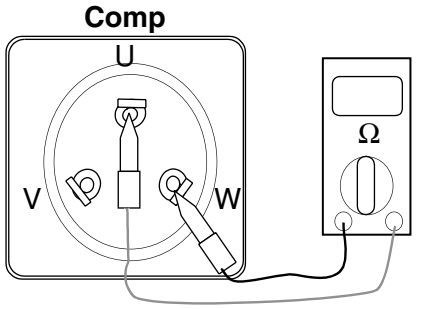
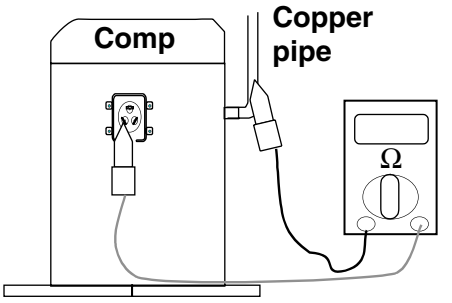
5) Troubleshooting CH21

Display code	Title	Cause of error	Check point & Normal condition
21	DC PEAK (IPM Fault)	• Instant over current • Over Rated current • Poor insulation of IPM	• An instant over current in the U,V,W phase - Comp lock - The abnormal connection of U,V,W • Over load condition - Overcharging of refrigerant Pipe length. Outdoor Fan is stop • Poor insulation of compressor



Resistance(Ω) at 20°C		
Terminal	5KD240XBA	5JD420XBB
U-V	1.843	1.08
V-W	1.893	1.12
W-U	1.812	1.09



Resistance(Ω) at 20°C	
Terminal	Inverter Comp.
U-GND	2MΩ
V-GND	2MΩ
W-GND	2MΩ

Check Point

1. Check the wire connection. (U,V,W)
2. Check the load condition. (Refrigerant, Pipe length, ...) Adjust the load condition
3. Check the electricity leakage of the compressor. Normal : Over 2MΩ.
4. Check the resistance of compressor.
5. Check the IPM circuit.(Continue next page)

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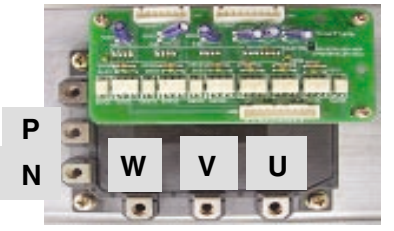
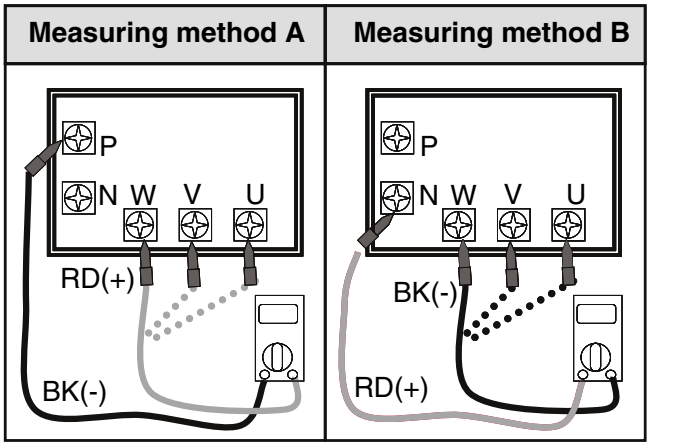
Troubleshooting CH21

Check the IPM (Measuring after Comp connector disconnect)

1) Test mode set diode mode(⊣▶⊢)



Terminal	Measuring method	
	A	B
U	0.4~0.6V	0.4~0.6V
V	0.4~0.6V	0.4~0.6V
W	0.4~0.6V	0.4~0.6V



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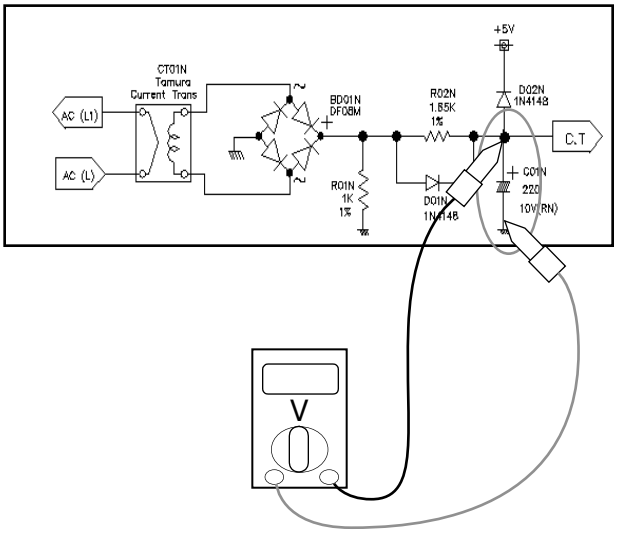
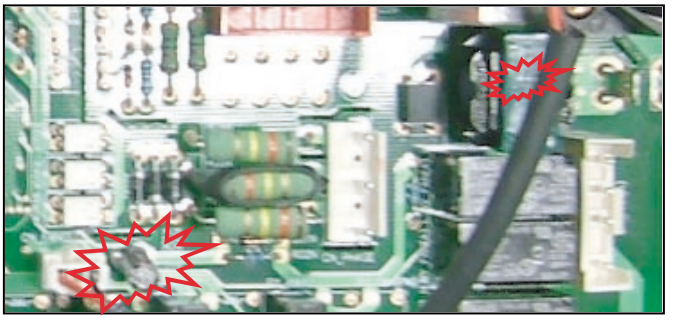
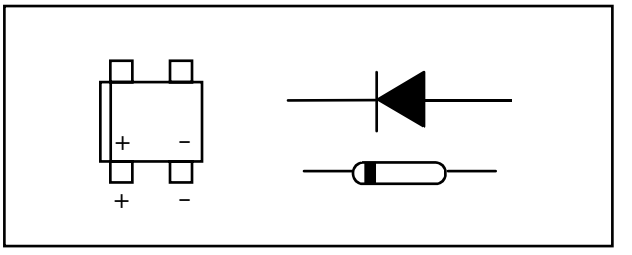
6) Troubleshooting CH22

Display code	Title	Cause of error	Check point & Normal condition
22	Max. C/T	Over current	Malfunction of compressor Blocking of pipe Low voltage input Refrigerant, pipe length, blocked, …







Check Point

1. Check the power source.(200~240V)
2. Check the fan operation is right.
3. Check the current.
4. Check the install condition.
5. Check the internal circuit. (C/T, Diode, Resistor)

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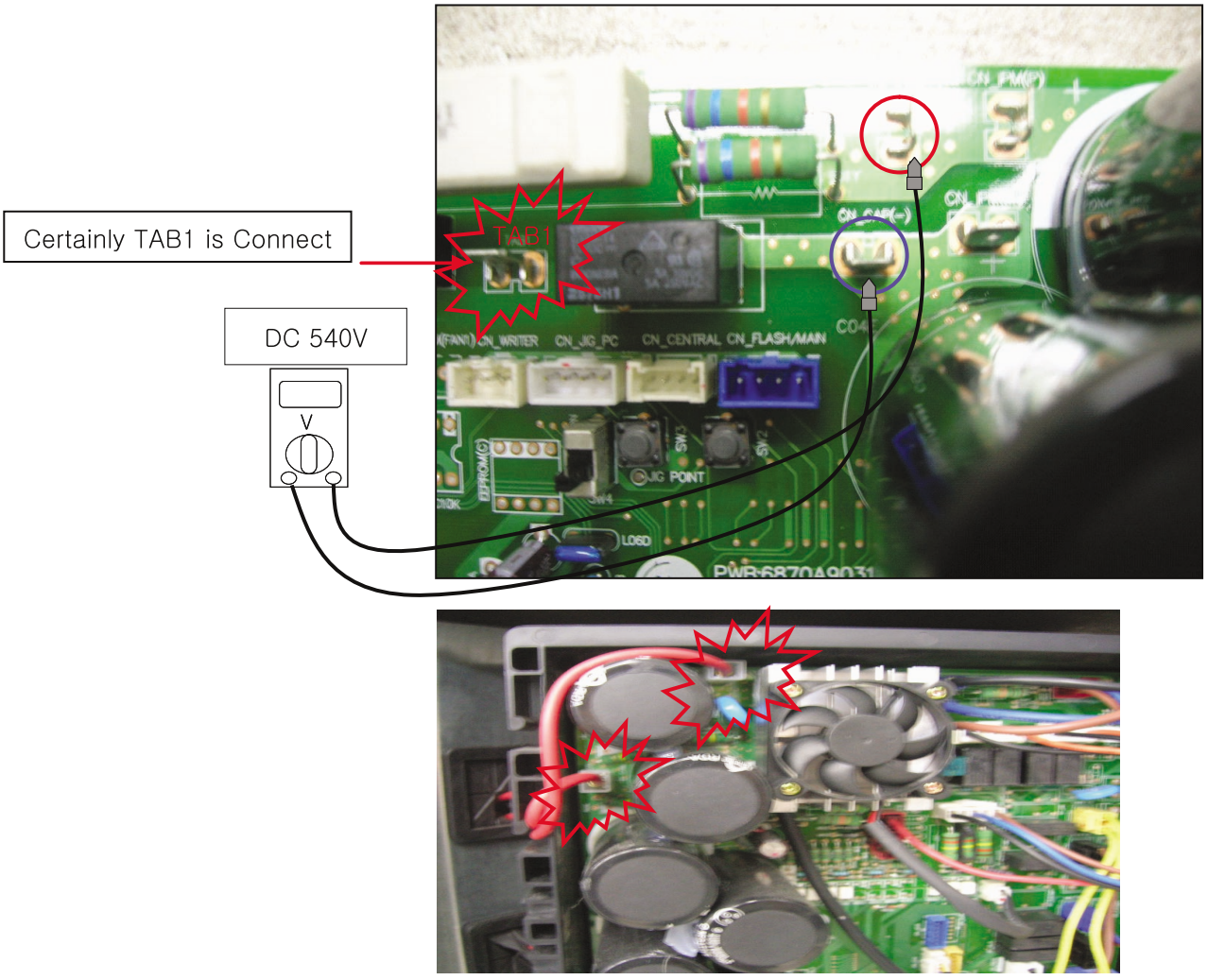
7) Troubleshooting CH23

Display code	Title	Cause of error	Check point & Normal condition
23	DC Link Low voltage	• DC Link volt is below 300V	• Check point & Normal condition • Check the TAB1 is connect. • At not operating : DC Link voltage(260V ↑) • At Comp operating : DC Link voltage(500V ↑)



Check Point

1. Check the Tab1 connection condition. (Refer to outdoor wiring diagram)
2. Check the CN_COIL(IN), CN_COIL(OUT) connection condition.
3. Check the DC Link voltage at not operating(260V ↑)
4. Check the DC Link voltage at Comp operating(500V ↑)

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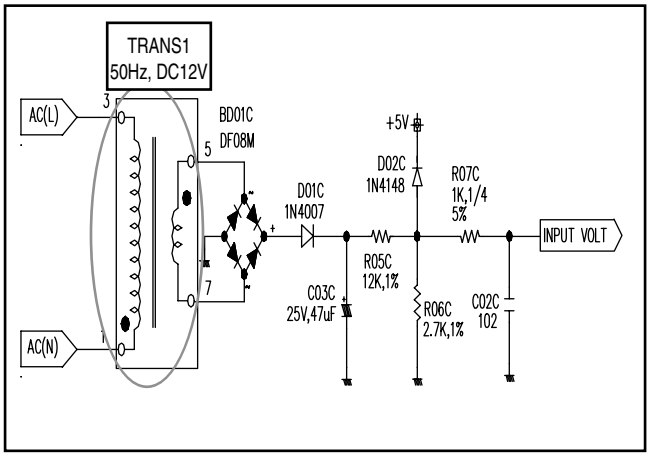
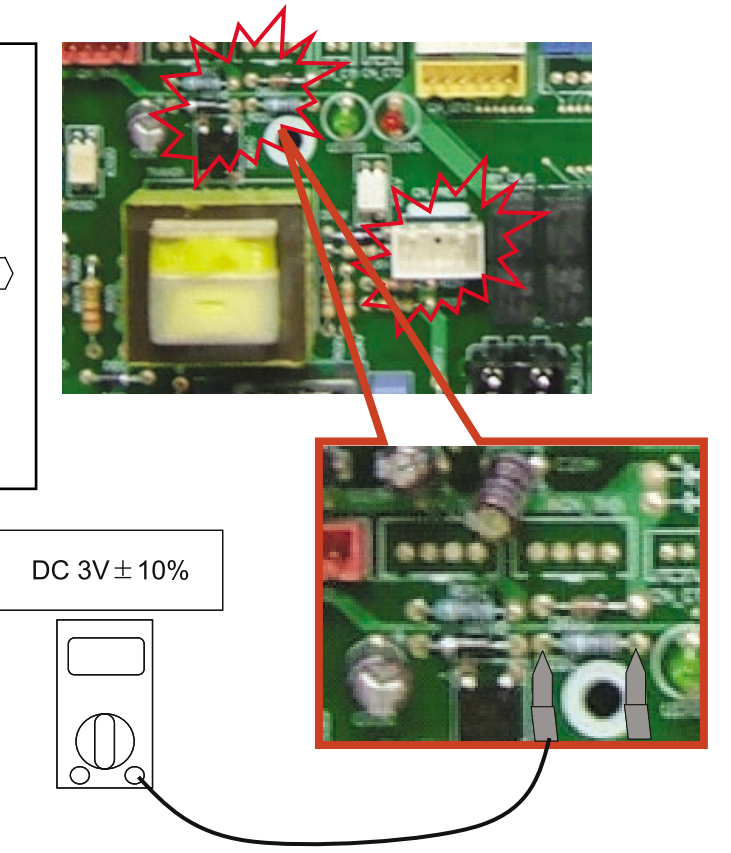
8) Troubleshooting CH24, CH25

Display code	Title	Cause of error	Check point & Normal condition
24	Press S/W Open	• Low / High press S/W open.	• Check the connection of “CN_Press”. • Check the components.
25	Input voltage	• Abnormal Input voltage (140Vac ↓, 300Vac ↑)	Check the power source. • Check the components.





Check Point

• CH 24

1. Check the connection of "CN_PRESS"
2. Check the component of press switch.
3. Check the install condition for over load.
4. Check the SVC V/V open.
5. Check the leakage of refrigerant.

• CH 25

1. Check the power source.
2. Check the components

❊ Trans1

- Primary resistance : 2.27kΩ ±10%
- Secondary resistance : 9Ω ±10%

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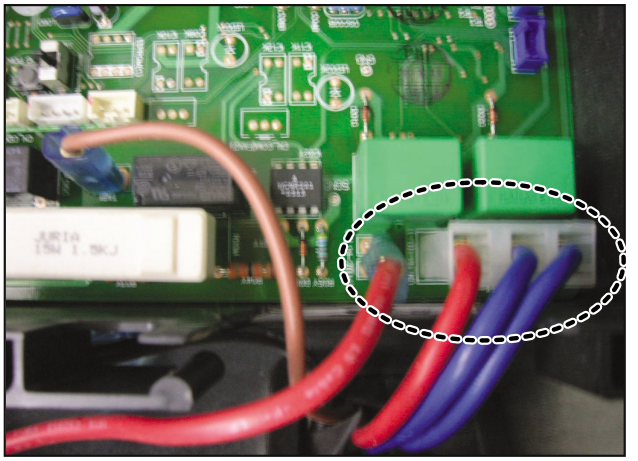
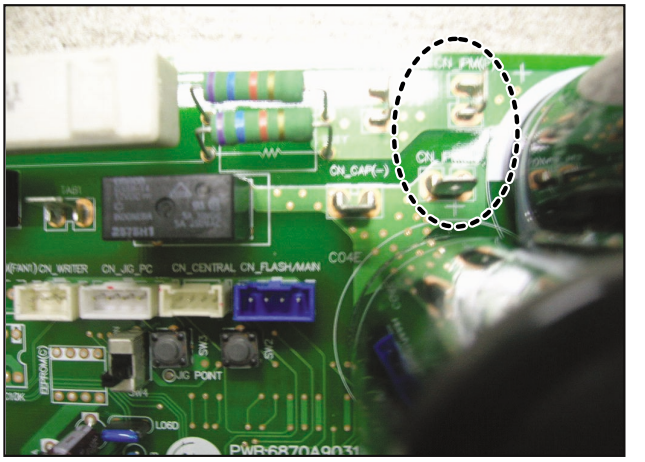
9) Troubleshooting CH26

Display code	Title	Cause of error	Check point & Normal condition
26	DC Compressor Position	• Compressor Starting fail error	• Check the connection of comp wire “U,V,W” • Malfunction of compressor • Check the component of “IPM”, detection parts.





Check Point

1. Check the connection condition of PCB.
2. Check the connection condition of Comp. U,V,W wire.
3. Check the connection condition of CN_IPM(P), CN_IPM(N).
4. Check the comp resistor and insulation resistance .
5. Check the IPM.
6. Check the pressure of refrigerant.
7. Check the Service Valve Open.

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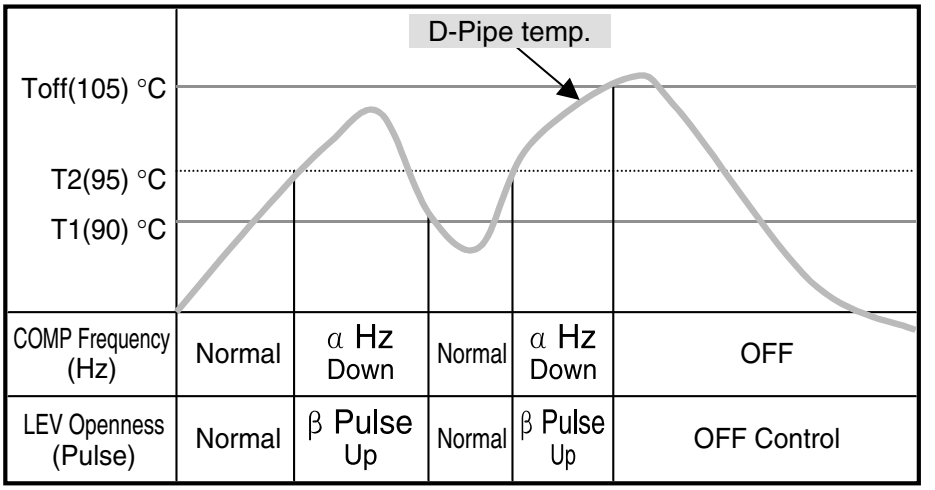
10) Troubleshooting CH32

Display code	Title	Cause of error	Check point & Normal condition
32	D-pipe (Inverter) temp. high (105°C)	• Discharge sensor (Inverter) temp. high	• Check the discharge pipe sensor for INV. • Check the install condition for over load. • Check the leakage of refrigerant. • Check the Service Valve open. • Check the outdoor fan.



Check Point

1. Check the install condition for over load.
2. Check the Service Valve open.
3. Check the outdoor fan operating condition
4. Check the leakage of refrigerant.

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11) Troubleshooting CH40

Display code	Title	Cause of error	Check point & Normal condition
40	C/T Sensor Error	• Initial current error	• Malfunction of current detection circuit. (Open / Short) • The voltage of "C01N" Is 4.0Vdc(25A) .

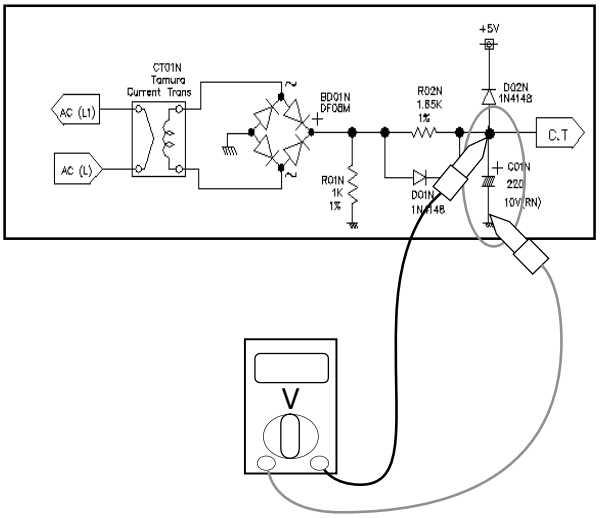


Figure 1.

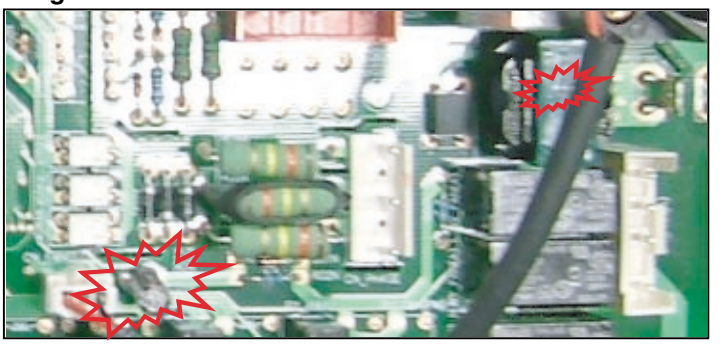
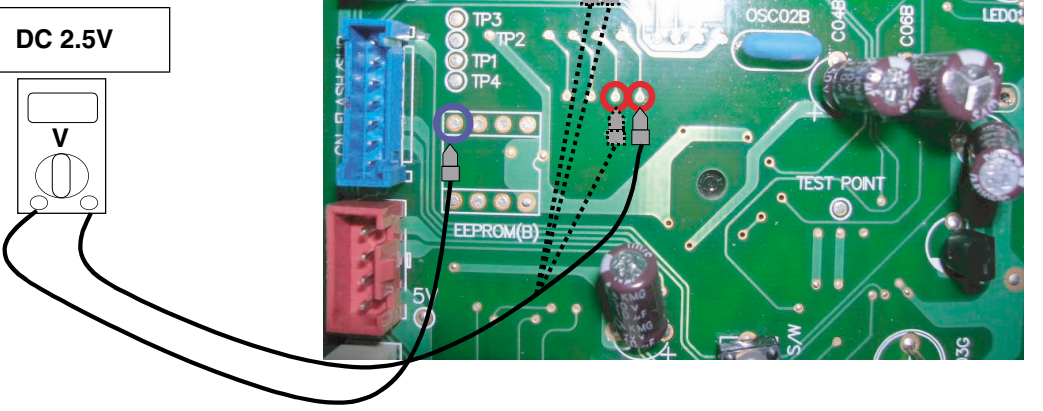


Figure 2.



Check Point

1. Check the input voltage.(200~240V)
2. Check the voltage of C01N at not operating.(0V)
3. Check the voltage of Figure2. red point at not operating.(2.5V)

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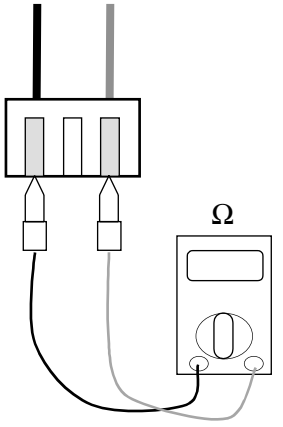
12) Troubleshooting CH41, CH44, CH45, CH46, CH47, CH65

Display code	Title	Cause of error	Check point & Normal condition
41	D-pipe sensor (Inverter)	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 200KΩ / at 25°C (Unplugged) • Normal voltage : 4.5Vdc / at 25°C (plugged)
44	Air sensor	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 10KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
45	Condenser Pipe sensor	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 5KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
46	Suction Pipe sensor	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 5KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)
47	D-pipe sensor (Constant)	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 200KΩ / at 25°C (Unplugged) • Normal voltage : 4.5Vdc / at 25°C (plugged)
65	Heat sink sensor	• Open / Short • Soldered poorly • Internal circuit error	• Normal resistor : 10KΩ / at 25°C (Unplugged) • Normal voltage : 2.5Vdc / at 25°C (plugged)



Check Point

1. Estimate the resistance of each sensor.(Unplugged)
2. Estimate the voltage of each sensor.(Plugged)
3. If the resistance of the sensor is 0 kΩ or ∞, then sensor is abnormal.
   If the voltage of the sensor is 0 V or 5Vdc, then sensor is abnormal.

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13) Troubleshooting CH51, CH60

Display code	Title	Cause of error	Check point & Normal condition
51	Over capacity	• Over capacity	• Check the indoor unit capacity. • Check the combination table.
60	Over capacity	• Check sum error	• Check the PCB ASM P/No. • Check the poor soldering.

Model	Max. single indoor unit capacity
AUUW368C AUUW368C1	40
AUUW428C	46
AUUW488C	52
AUUW608C	65

Check Point

• CH 51

1. Check the indoor unit capacity.

• CH 60

1. Check the insertion condition of EEPROM.
2. Check the poor soldering

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14) Troubleshooting CH54

Display code	Title	Cause of error	Check point & Normal condition
54	3-phase wrong wiring of main outdoor unit	• 3-phase wrong wiring of outdoor unit (Reverse Phase /omission of phase)	• Abnormal Main PCB • No connection of CN_Phase • Changed R, S, T connection order

Check Point

1. Check the connection condition of R,S,T wire.
2. Check the connection condition of CN_Phase.
3. Check the outdoor main fuse.

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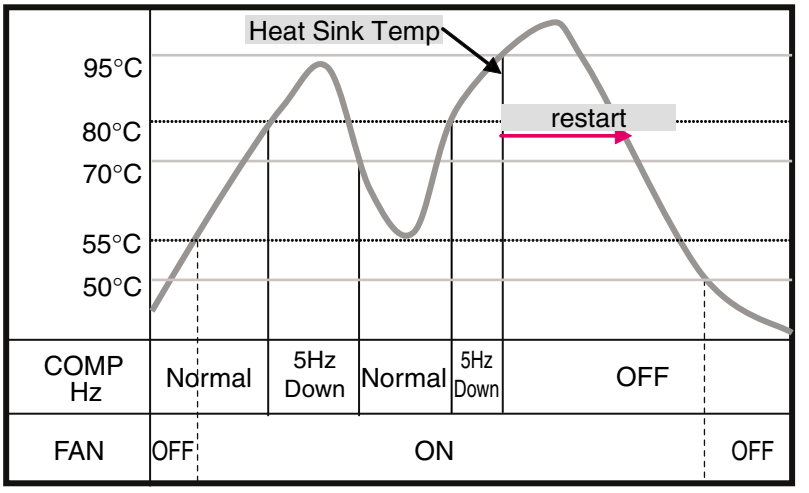
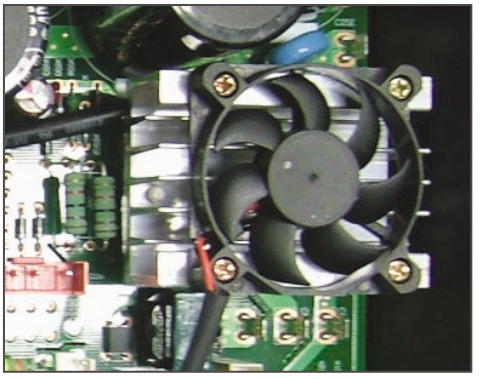
15) Troubleshooting CH61, CH62

Display code	Title	Cause of error	Check point & Normal condition
61	Condenser pipe sensor temp. high	• Condenser pipe sensor detected high temp.(65°C)	• Check the load condition. • Check the sensor of Condenser pipe sensor.
62	Heat sink sensor temp. high	• Heat sink sensor detect-ed high temp.(95°C)	• Check the fan is locked. • Check the sensor of heat sink.





Check Point

• CH 61

1. Check the install condition for over load. (Refrigerant, Pipe length, Blocked, …)

• CH 62

1. Check the fan is locked.
2. Check the sensor of heat sink.

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16) Troubleshooting CH67, CH105

Display code	Title	Cause of error	Check point & Normal condition
67	Outdoor fan lock	• Outdoor fan is not operating	• Check the fan condition. • Check the fan connector
105	Communication error between main PCB and fan PCB	• Communication error between main PCB and fan PCB	• Short or fusing of communication line • Poor outdoor unit PCB • Power input when the DC link capacitor discharges

Check Point

• CH 67

1. Check the install condition for fan.

• CH 105

1. Is communication line between the main PCB and the fan PCB normal?
2. Is the communication LED on?

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IV. Electronic Control Device

Ceiling Cacsette Type.....107

Ceiling Duct Type.....108

Celing Suspended 109

Outdoor Unit.....110

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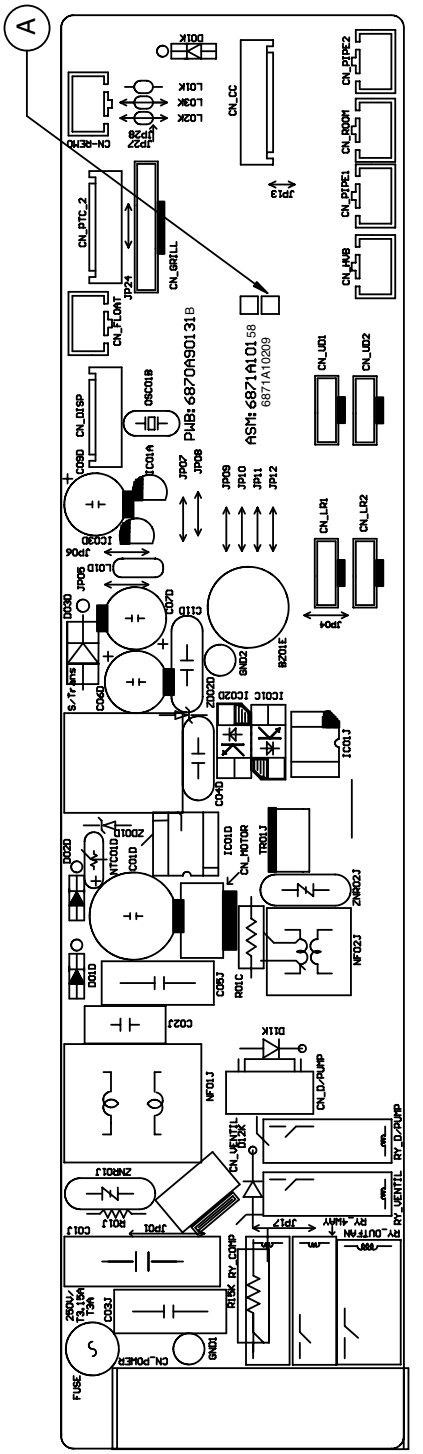
Ceiling Cacsette Type

Main P.C.B ASM



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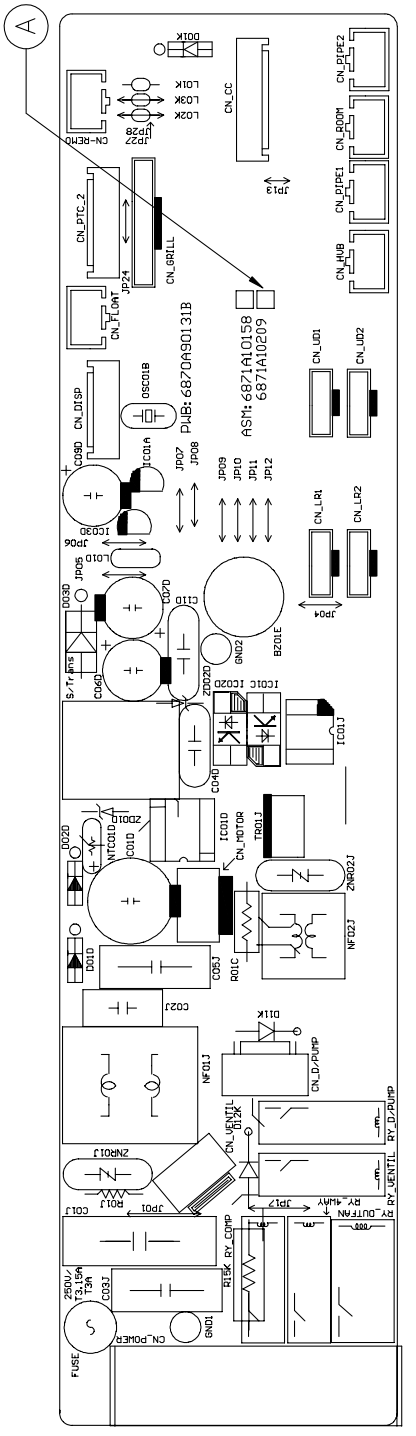
Ceiling Duct Type

(BG/BR Series)



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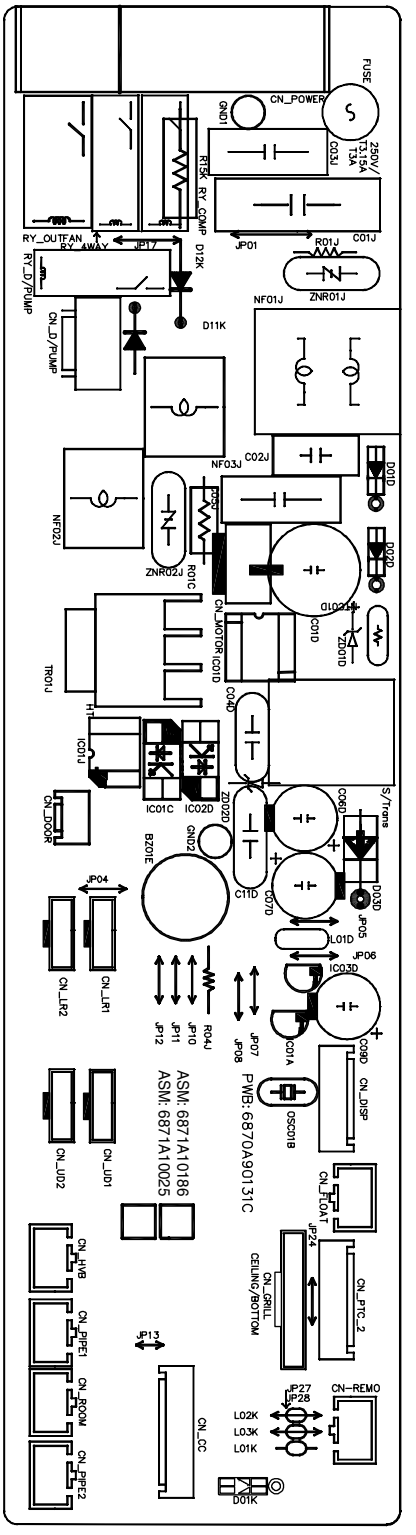
Ceiling Suspended

(VK/VL Series)



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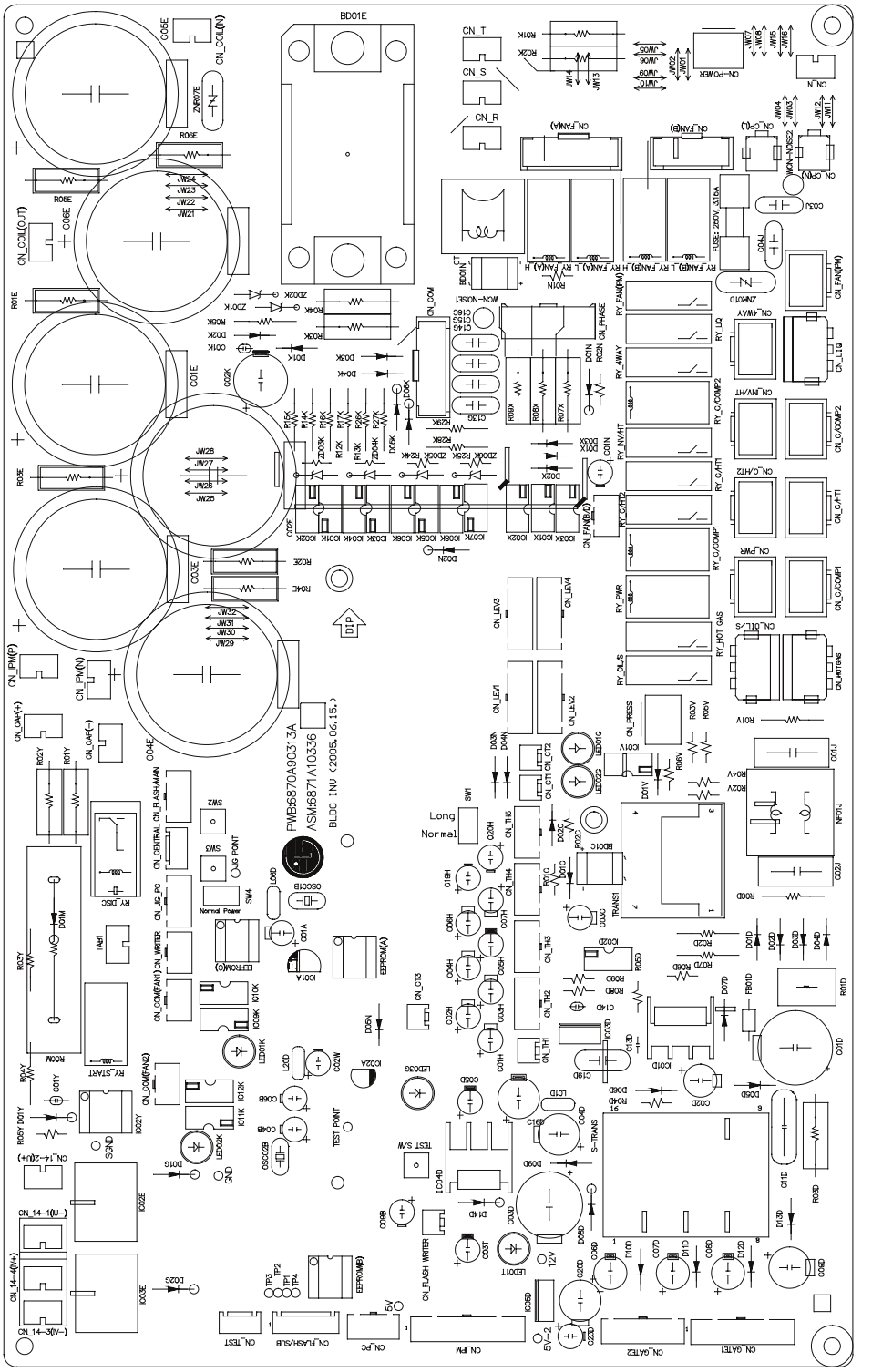
Outdoor Unit

1) Component side



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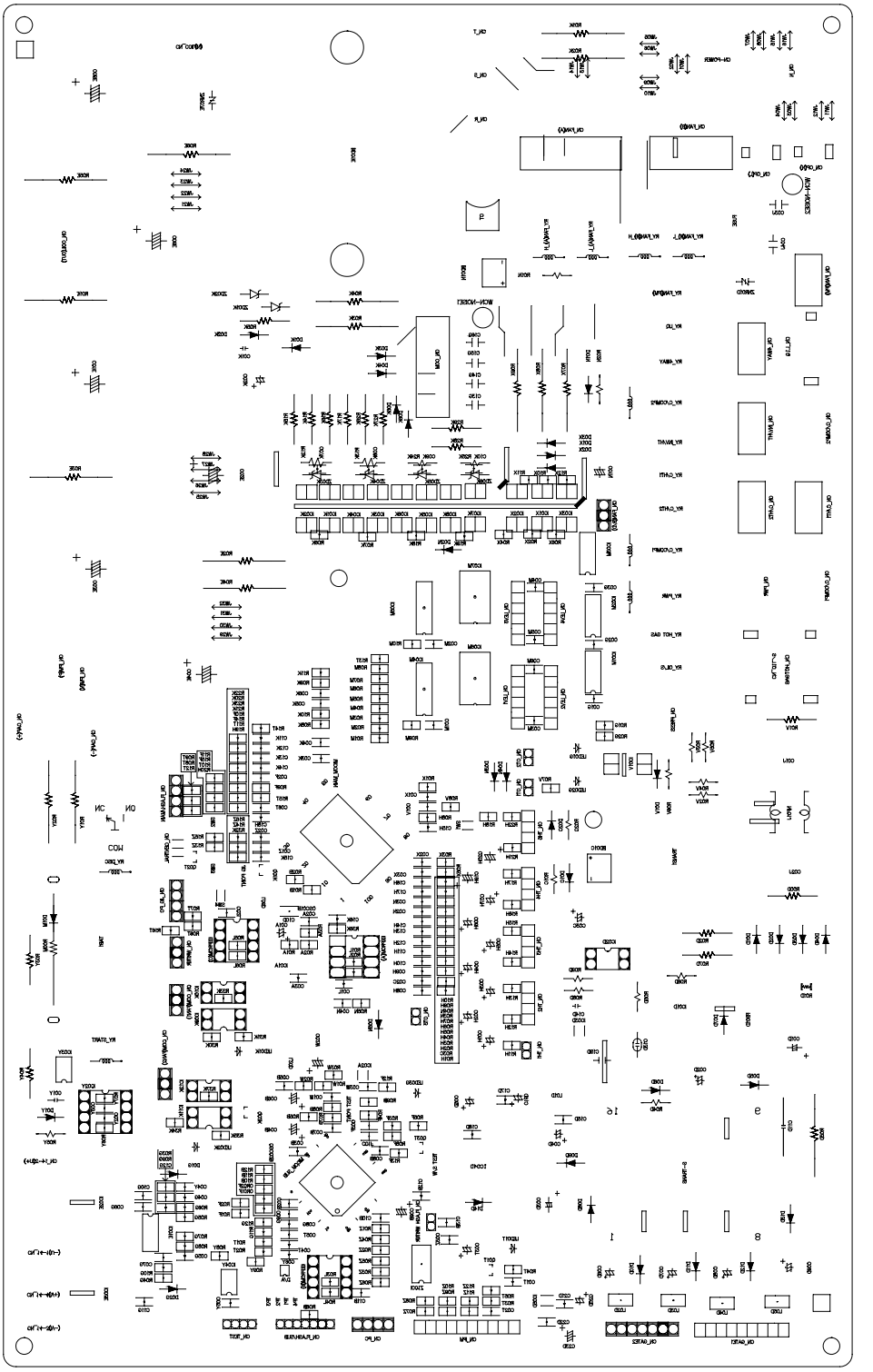
2) Solder side



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V. Schematic Diagram

Ceiling Cacsette Type.....113

Ceiling Duct Type.....114

Celing Suspended 115

Outdoor Unit.....116

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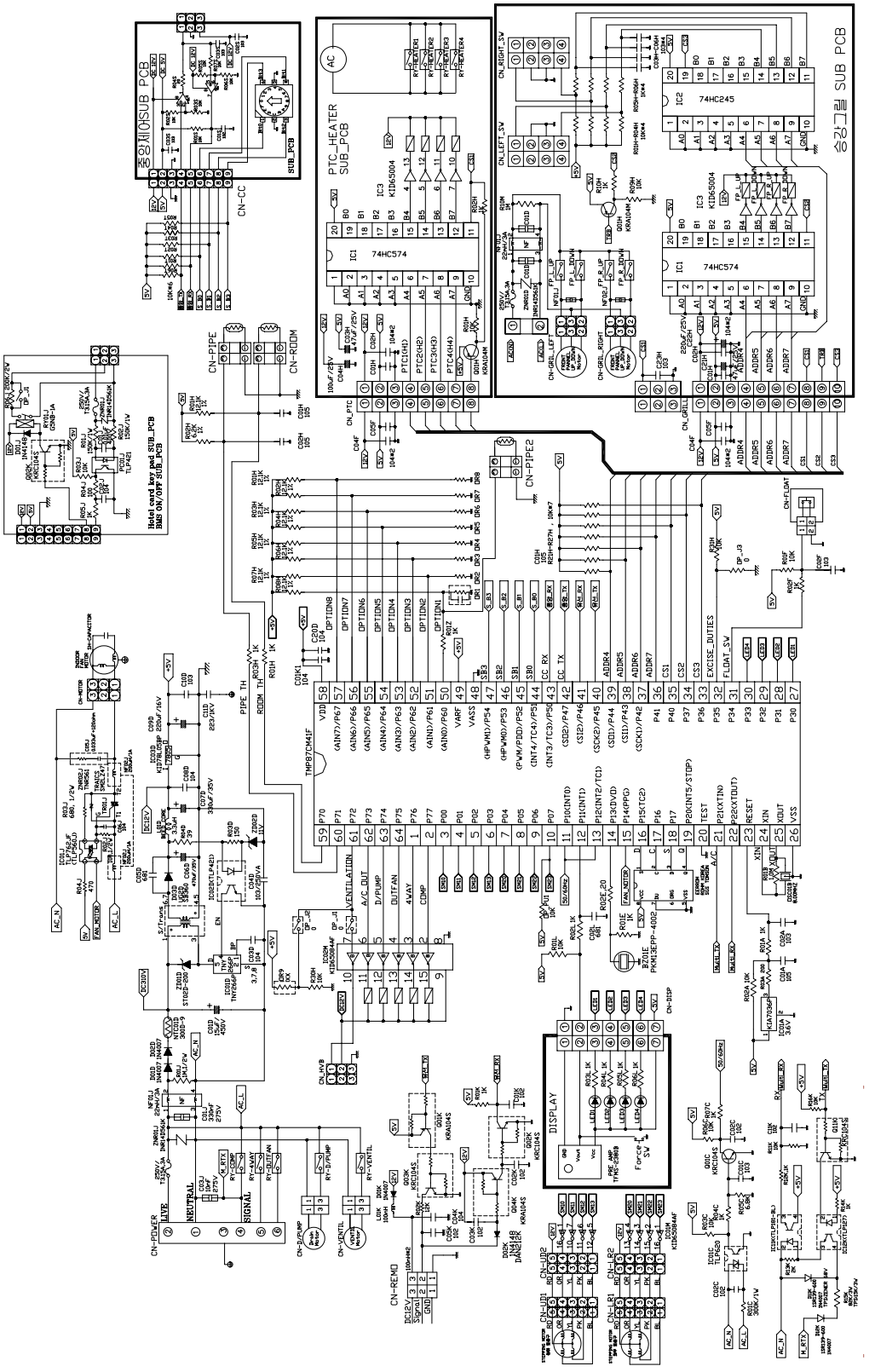
Ceiling Cassette Type



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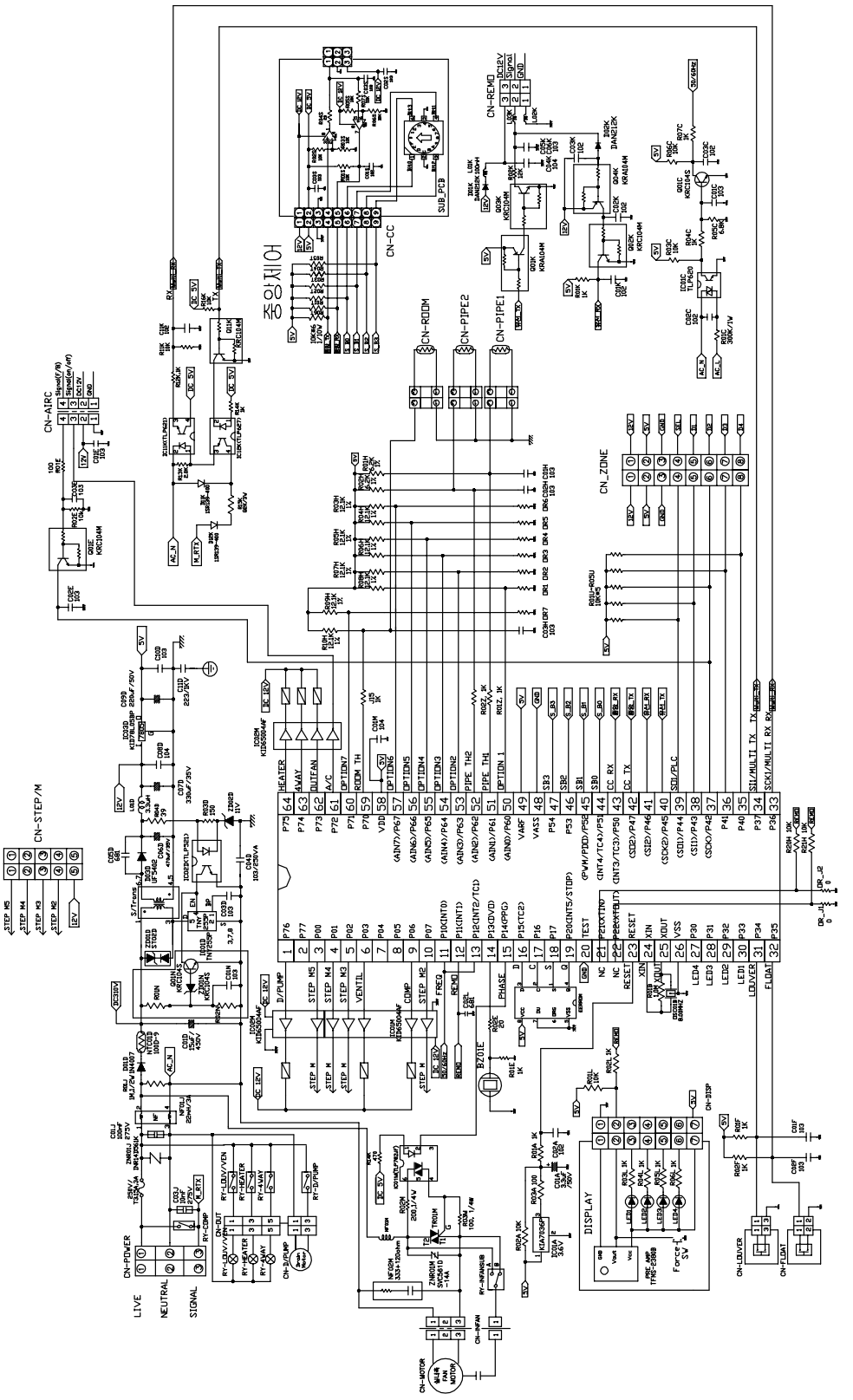
Ceiling Duct Type



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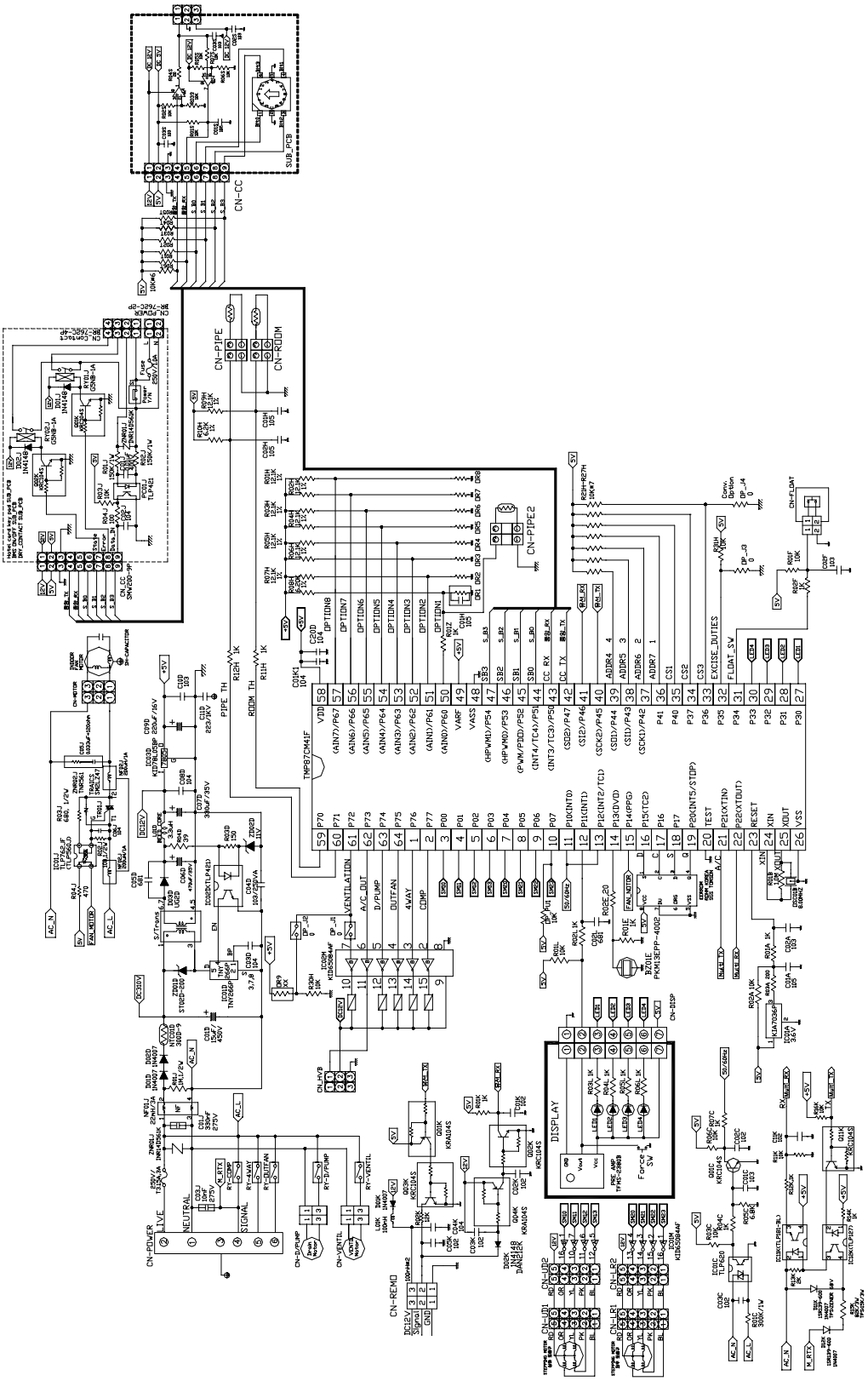
Ceiling Suspended



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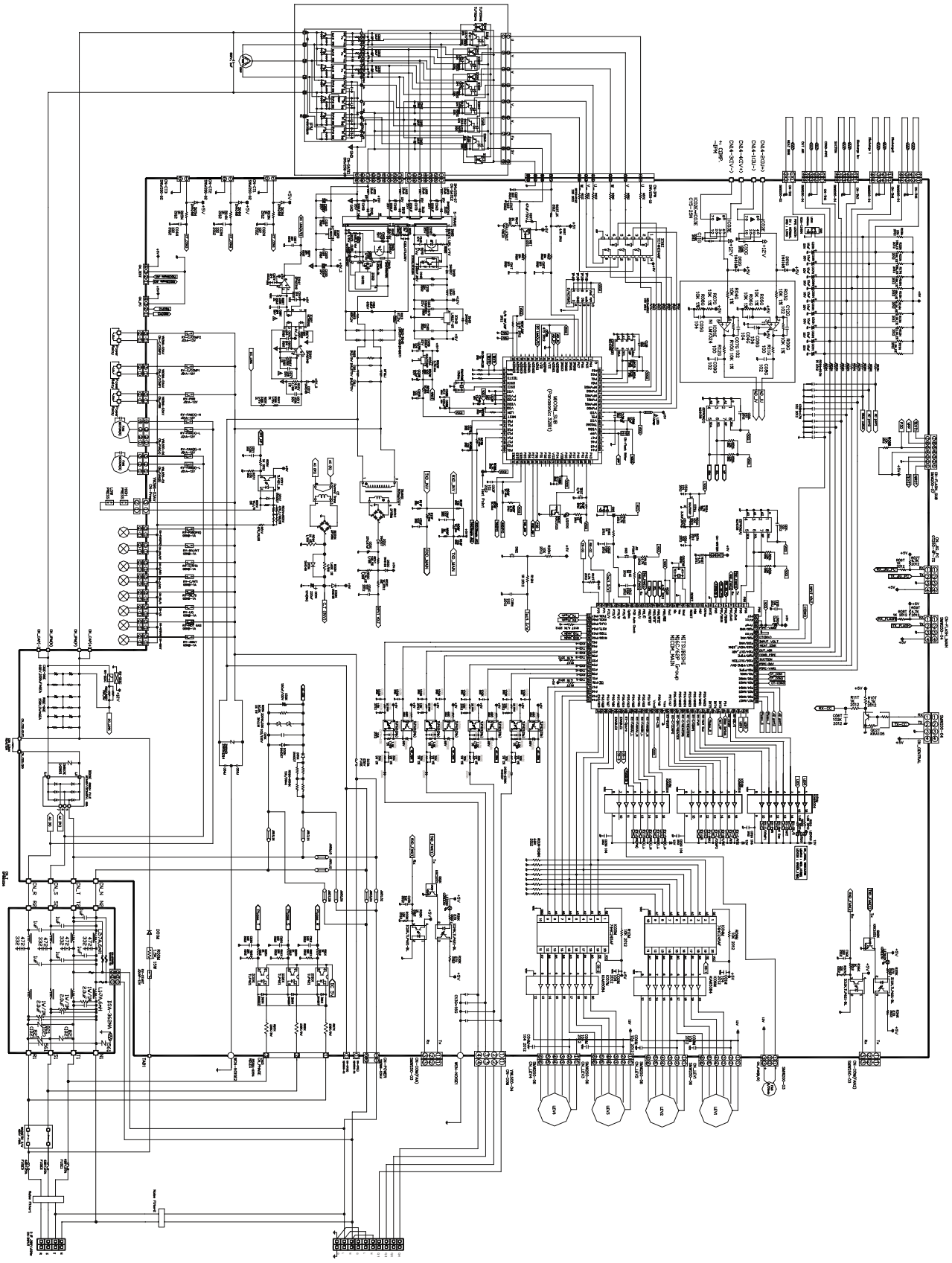
Outdoor Unit



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VI. Functional Description

Ceiling Cacsette Type.....118

Ceiling Duct Type.....120

Celing Suspended 123

Outdoor Unit.....126

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Ceiling Cassette Type

The function of main control

■ Auto Swing Control

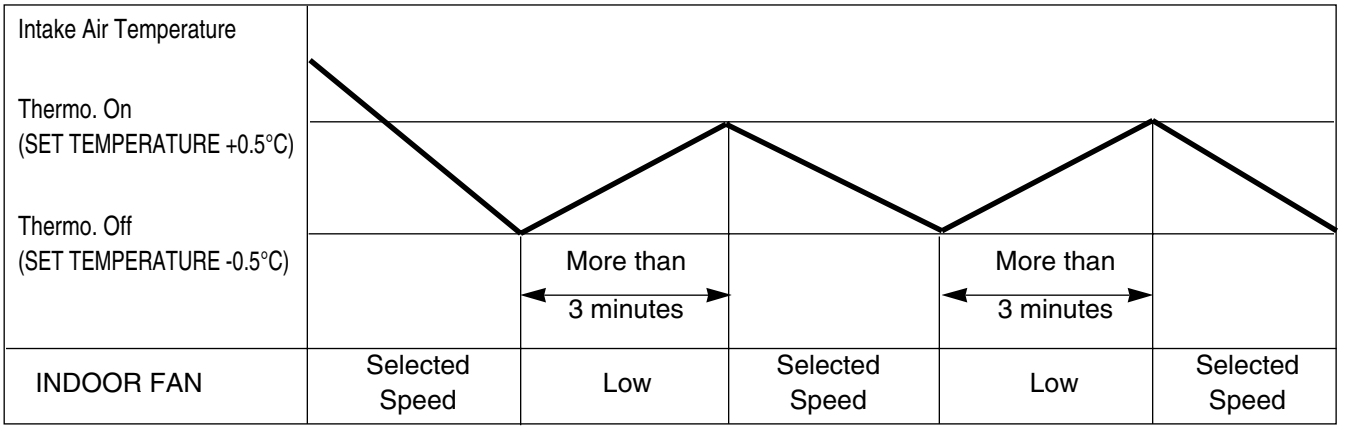
• This function is to swing the louver up and down automatically.

■ Soft-Dry Operation

• The indoor fan speed is automatically set to the low, so the shift of the indoor fan speed is impossible because of already being set to the best speed for Dry Operation by microcontroller control.

■ Cooling Mode Operation

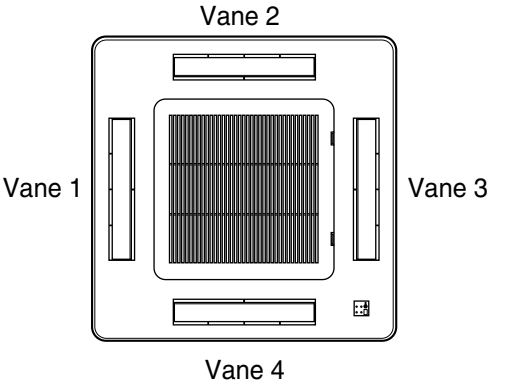
• When selecting the Cooling(❄) Mode Operation, the unit will operate according to the setting by the remote controller and the operation diagram is as following



■ Swirl Swing Control

Vane 2, 4 is almost vane closed while vane1, 3 is opened.

Vane 1, 3 and vane 2,4 turn over minutely



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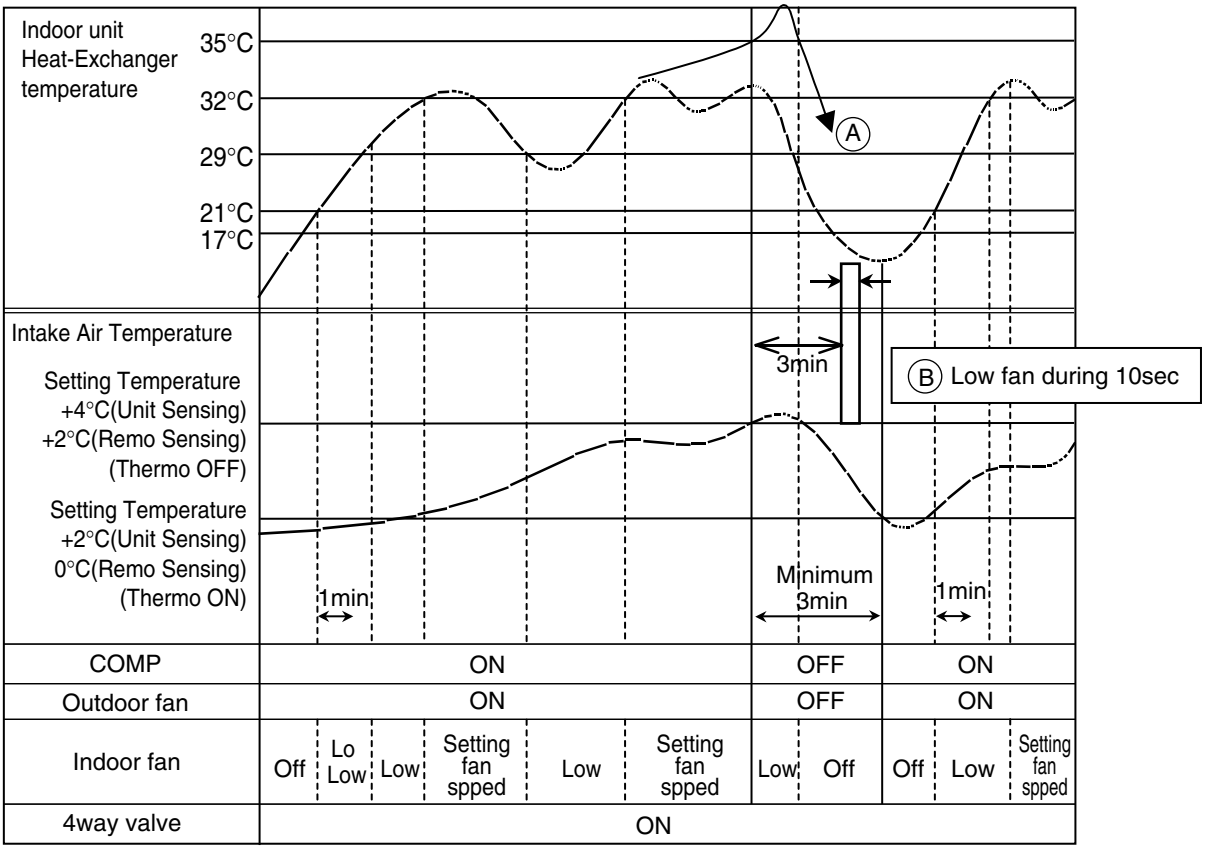
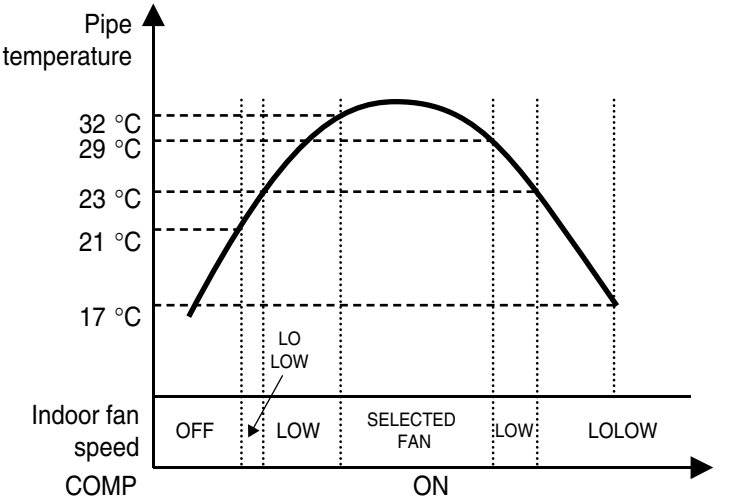
■ Heating Mode Operation

The unit will operate according to the setting by the remote controller and the operation diagram is shown as following.



■ Hot-start Control

- The indoor fan does no rotate until the evaporator piping temperature will be reached to 21°C.
- The operation diagram is as following.



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Ceiling Duct Type

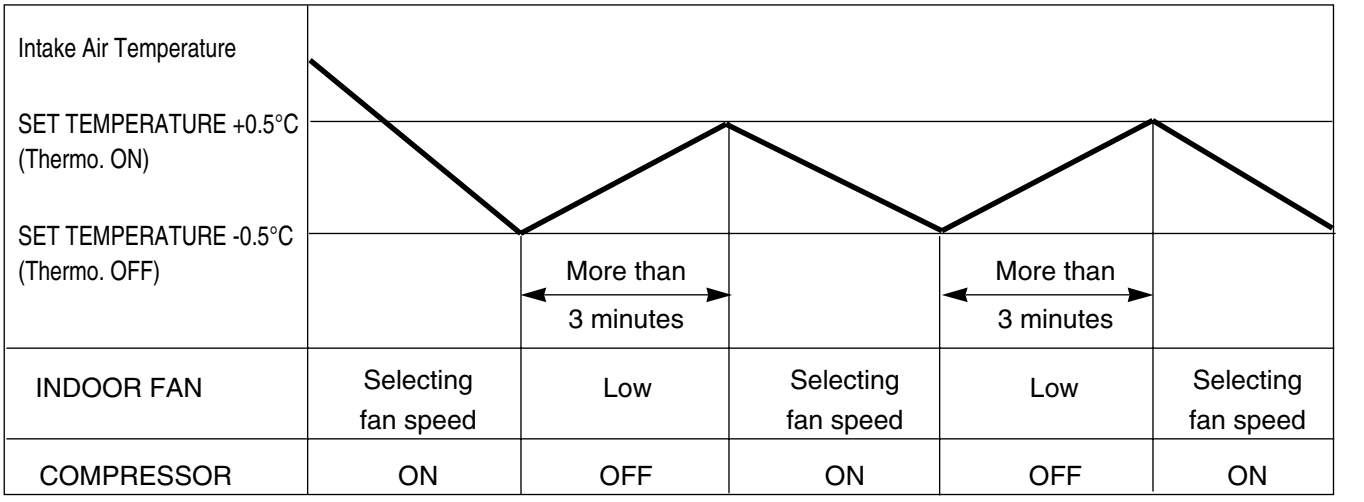
The function of main control

■ Soft-Dry Operation

• The indoor fan speed is automatically set to the low, so the shift of the indoor fan speed is impossible because of already being set to the best speed for Dry Operation by microcontroller control.

■ Cooling Mode Operation

• When selecting the Cooling(❄) Mode Operation, the unit will operate according to the setting by the remote controller and the operation diagram is as following.



INDOOR FAN	Selecting fan speed	Low	Selecting fan speed	Low	Selecting fan speed
COMPRESSOR	ON	OFF	ON	OFF	ON

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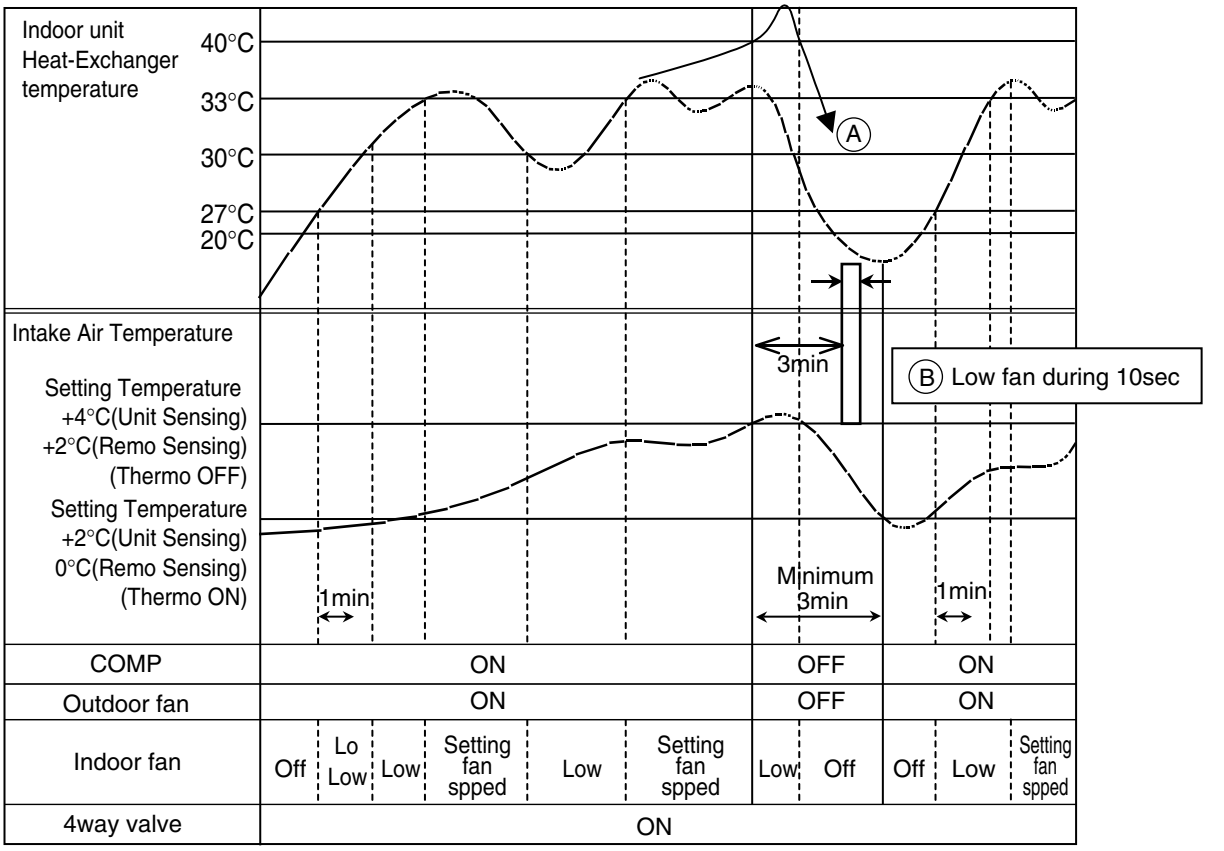
■ Heating Mode Operation

The unit will operate according to the setting by the remote controller and the operation diagram is shown as following.



• **Compressor-off interval** : - (A) While the indoor Heat-Exchanger temperature is higher than 40°C, fan operates at low speed, when it becomes lower than 40°C fan stops.
- (B) For eluminating latent heat-loss, fan operates at low speed for 10 seconds periodically.

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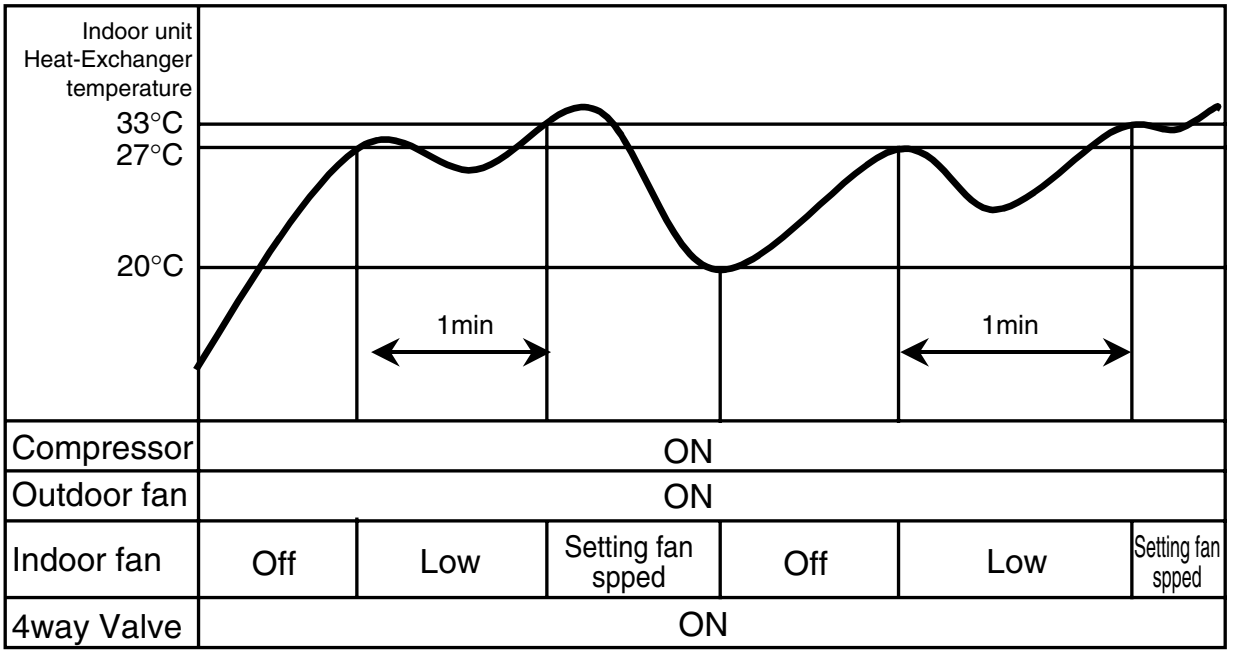
■ Hot-Start Control

• The indoor fan does not rotate until the indoor unit Hex-Exchanger temperature reaches 27°C.

• The operation diagram is as following.



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Ceiling & Floor

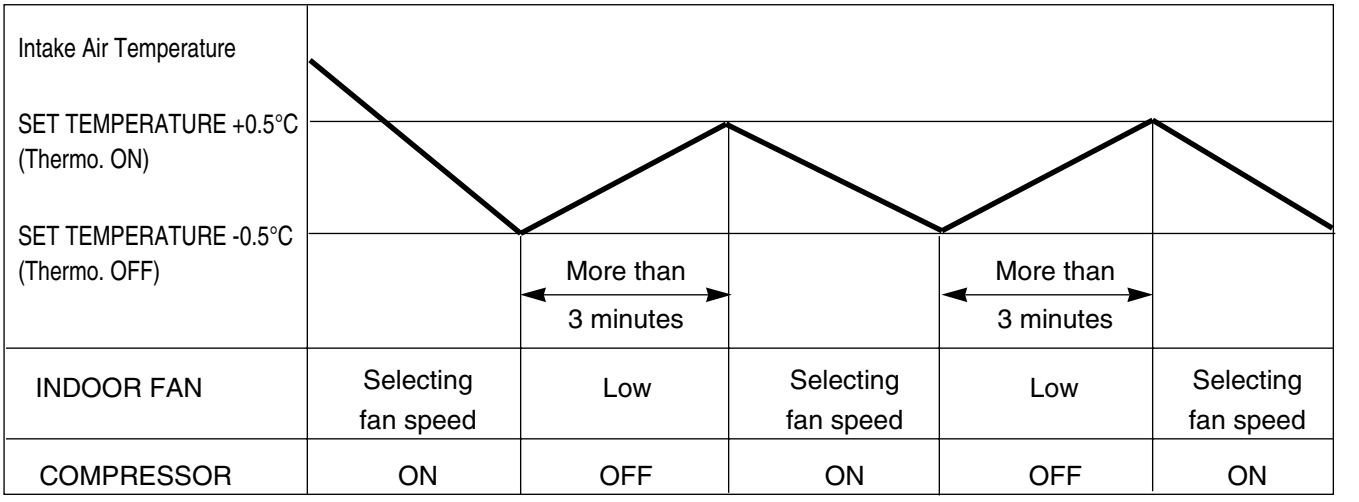
The function of main control

■ Soft-Dry Operation

• The indoor fan speed is automatically set to the low, so the shift of the indoor fan speed is impossible because of already being set to the best speed for Dry Operation by microcontroller control.

■ Cooling Mode Operation

• When selecting the Cooling(❄) Mode Operation, the unit will operate according to the setting by the remote controller and the operation diagram is as following.



INDOOR FAN	Selecting fan speed	Low	Selecting fan speed	Low	Selecting fan speed
COMPRESSOR	ON	OFF	ON	OFF	ON

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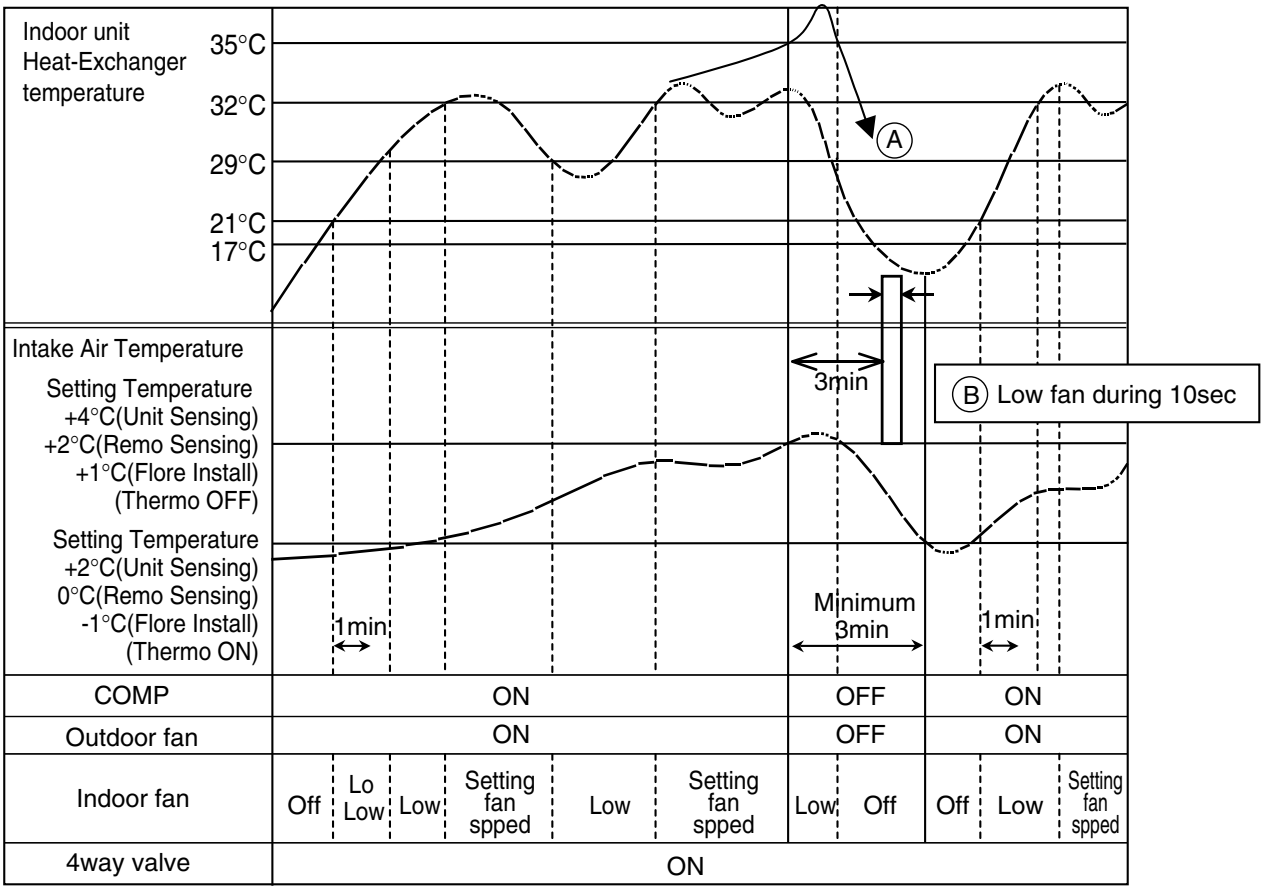
■ Heating Mode Operation

The unit will operate according to the setting by the remote controller and the operation diagram is shown as following.



• **Compressor-off interval** : - (A) While the indoor Heat-Exchanger temperature is higher than 35°C, fan operates at low speed, when it becomes lower than 35°C fan stops.
- (B) For eluminating latent heat-loss, fan operates at low speed for 10 seconds periodically.

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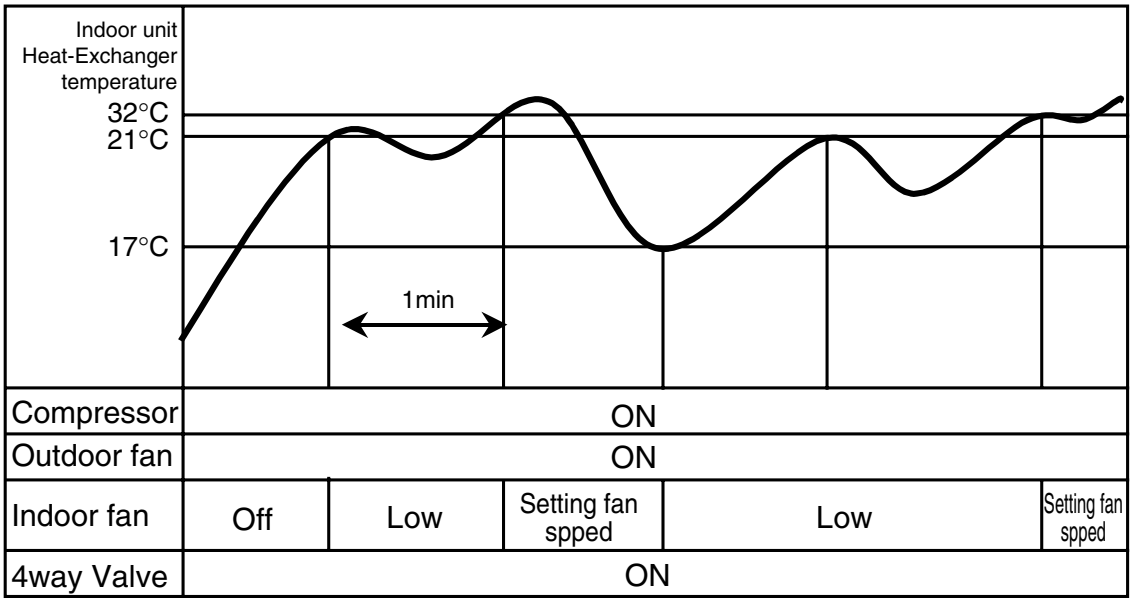
■ Hot-Start Control

• The indoor fan does not rotate until the indoor unit Hex-Exchanger temperature reaches 21°C.

• The operation diagram is as following.



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Outdoor Units

1.Basic control

1.1 Normal operation

	Cooling mode	Heating mode	Stop state
Compressor	Step Control	Step Control	stop
Fan	Step Control	Step Control	After 30sec, Off
EEV	PID Control	PID Control	After 60sec, Full Open
4 way valve	Off	On	After 30sec, Off

❉ PID : Proportional Integrate Derivative

1.2 Compressor control

Frequency Control:Frequency that corresponds to a room capacity will be determined according to the room temperature, outdoor temperature and the difference in the temperature of a room and the temperature set by the remote controller.

Comp_Step = (Step_base+Long piping compensation) x ΔStep_TAO x Δ Step_TAI x Δ Step_DTAI

Step_base	Standard frequency step by ∑Qj (Summation of capacity code)
Long piping	Comp. Step compensation by setting long piping
ΔStep_TAO	step compensation by TAO (Outdoor temp.)
ΔStep_TAI	step compensation by TAI (Indoor temp.)
ΔStep_DTAI	Step Compensation of temperature difference Indoor Temp. and Setting Temp.

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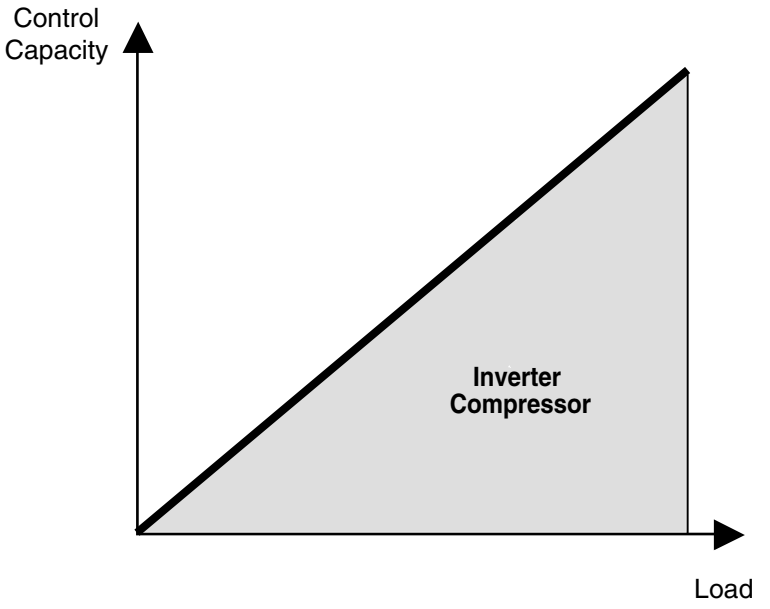
❉ Target frequency step (Step_base) exceeds maximum step, the Step_base value follows the maximum step value.

❉ The compressor get the minimum step in case Step_base value is lower than the minimum step of operating capacity.

Compressor operation range



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1.3 EEV Control

1) Superheating control (Cooling Mode)

- Superheating : T superheating = Tout – Tin = 2°C
- LEV pulse up : T superheating > 2°C
- LEV pulse down : T superheating < 2°C

2) Target Temperature Control (Cooling mode)

- In case, outdoor temperature > 39°C
- Target superheating : T target = Tin = 18°C
- LEV pulse up : T target < 18°C
- LEV pulse down : T target > 18°C

3) Target Temperature Control (Heating mode)

- LEV pulse up : T target > Tout
- LEV pulse down : T target < Tout

4) LEV pulse change Value

8 pulse (P1-P0 > 4°C)

4 pulse (4°C ≥P1-P0 > 3°C)

2 pulse (3°C ≥P1-P0 > 1°C)

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1.4 Fan control

Control logic of outdoor fan depends on Outdoor temperature.

(1) Single fan model

Step_Fan	Fan A
2	High
1	Low
0	X

(2) Two fan model(36k)

Step_Fan	Fan (A)	Fan (B)
4	High	High
3	Low	Low
2	High	X
1	Low	X
0	X	X

Cooling Single FAN	Outdoor temperature	Cooling two FAN
Step_Fan + 1	**41**°C	Step_Fan + 2
		Step_Fan + 1
Step_Fan (2)	**38**°C	Step_Fan
Step_Fan - 1	**28**°C	Step_Fan - 1
	22°C	Step_Fan - 2
	10°C	Step_Fan - 3

Heating Single FAN	Outdoor temperature	Heating two FAN
Step_Fan - 1	**20**°C	Step_Fan - 2
		Step_Fan - 1
Step_Fan (4)	**14**°C	Step_Fan
Step_Fan + 1	**4**°C	Step_Fan + 1
	-3°C	Step_Fan + 2

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(3) Two fan model(42k, 48k, 60k)

RPM step = Load_Step (42k: 9/9 step, 48k~60k:10/12 step)
+ Step Compensation by Outdoor Temp.
+ Step Compensation of temperature difference Indoor Temp. and Setting Temp

STEP TABLE

	RPM(Upper)	RPM(Lower)
STEP-1	200	OFF
STEP-2	200	200
STEP-3	250	250
STEP-4	300	300
STEP-5	400	400
STEP-6	500	500
STEP-7	600	600
STEP-8	700	700
STEP-9	750	750
STEP-10	800	800
STEP-11	850	850
STEP-12	900	900
STEP-13	950	950
Min. RPM	200	200
Max. RPM	950	950

Step Compensation by Outdoor Temp.
(Cooling)

Outdoor Temp.	2 FAN
	Step_Fan + 3
45°C	Step_Fan + 2
41°C	Step_Fan + 1
38°C	Step_Fan
28°C	Step_Fan - 2
24°C	Step_Fan - 4
18°C	Step_Fan - 6
14°C	Step_Fan - 7
9°C	Step_Fan - 8
2°C	Step_Fan - 8
-5°C	Step_Fan - 8

(**Heating)**

Outdoor Temp.	2 FAN
	Step_Fan - 4
26°C	Step_Fan - 3
20°C	Step_Fan - 2
14°C	Step_Fan
4°C	Step_Fan + 1
-1°C	Step_Fan + 3
-7°C	Step_Fan + 4

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2. Special control

2.1 Defrost control

2.1.1 Starting to the defrosting operation

1) Defrost operation will be start when the conditions below are matched

a) Accumulation time of operation and the period after completion of defrost = 35 min.

b) After 10 minutes from re-starting the compressor .In case of being over 35 minutes of accumulated operating time, defrosting operation starts after 10 minutes.

c) Piping temperature of the outdoor heat exchanger maintain below defrost starting temperature for 4 minutes after 35 minutes continuous operation.

d)In case of passing 10 minutes after oil recovery operation

2) Outdoor piping temperature is below than –6 (Option) °C for starting defrosting operation.

2.1.2 Defrosting Control Algorithm

1) Lowering the compressor frequency when starts the defrosting operation.

Constant speed compressor is ON after 10 seconds from the arrival time of 30 Hz (Option) frequency and is speed up its revolution till 100 Hz (Option)

2) Every LEV have 350 pulse (Option) of opening when starts defrosting operation.

3) Reversing valve is OFF after 5 seconds from arriving the compressor operating frequency of 30 Hz and then fans of indoor units turn OFF.(including the indoor unit with being OFF except the remote controller is being OFF)

4) After 5 seconds minutes from the time arriving 30 Hz, fans of outdoor unit turn OFF and Hot Gas bypass/Oil separator valve turn ON.

2.1.3 Control algorithm of defrost completion

1) Frequency of compressor lowering to 30 Hz and maintain constant speed operation with 30 Hz for 75 seconds and then stating operation. If the constant speed compressor is OFF, it will be receive OFF signal after 5 seconds from the arrival time of 30 Hz.

2) The LEV will open with the standard previous pulse after 5 seconds from the time of 30 Hz.

3) Reversing valve is ON after 15 seconds from the time of 30 Hz of compressor frequency.

4) Fan of outdoor unit is ON with high speed and maintain it after 5 seconds from the time of 30Hz.

5) Hot Gas bypass valve/Oil separator bypass valve make OFF after 75 seconds from the time of 30Hz.

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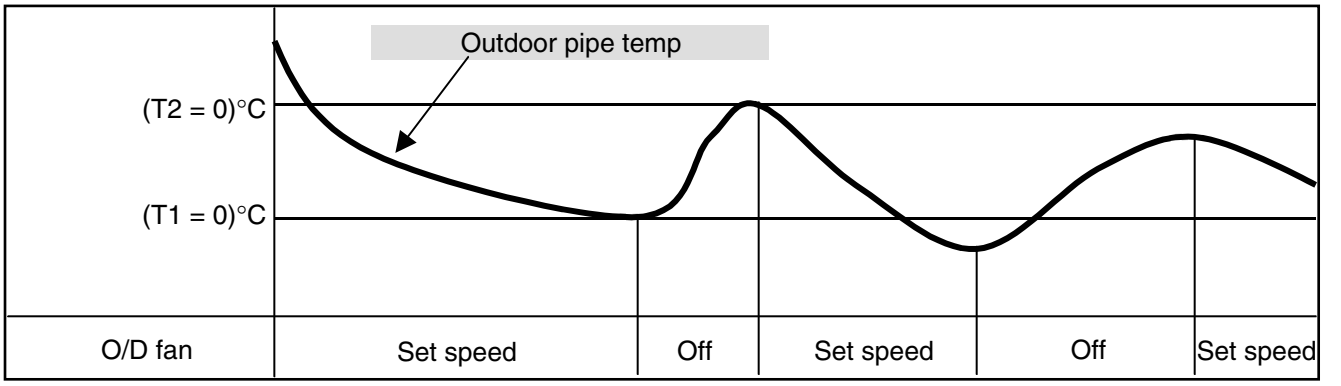
2.2 Low ambient control

Low ambient cooling case : In this situation outdoor fan works in ON/OFF control.

: If the pipe temperature 0°C and it is falling rapidly in that case compressor will run for 5 min & then it will go in low ambient control. (❉ Temp. value can be different for each model.)

❉ After the system is stopped by CT cut or heat sink cut-off then the cycle returns to the normal condtiond control.



2.3 Oil return control

2.3.1 Operating Contion

1) When the continuous running time is over 3hr.(option), oil returning operation is made for 3min. In case of the initial operation, oil returning operation is made, after completing initial operation.
2) After defrost and oil returning operation, the continuous running time is resetted.

2.3.2 Operation Process

1) EEV-Full open, Hot gas bypass valve-On
2) Compressor Step-70Hz (Option)
3) Reversing valve-Off(Process of Off/On, follows defrost operating.)
4) Outdoor Fan-Low step

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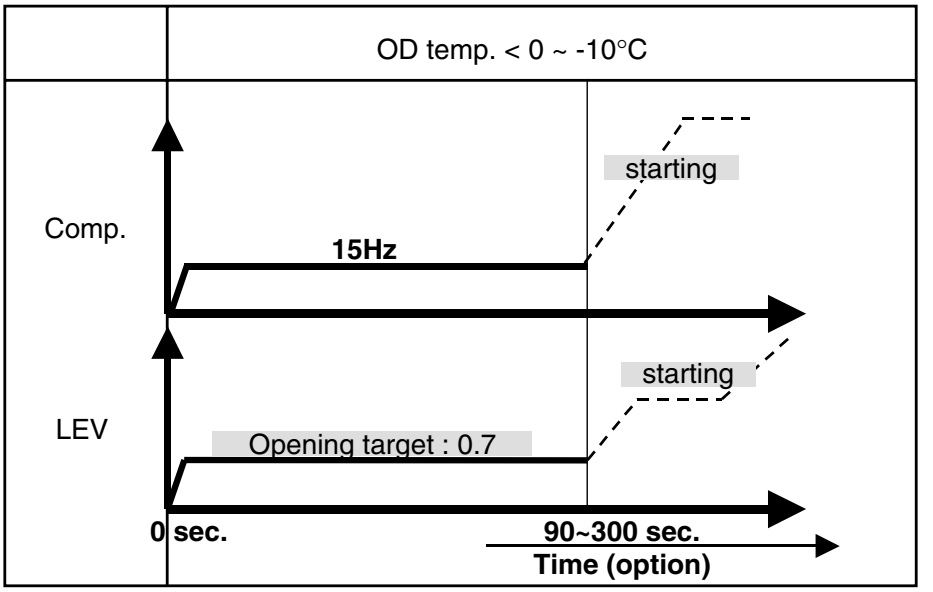
2.4 Sump heating control

2.4.1 Inverter compressor sump heating fuction

: A function protecting inverter compressor from damages, by increasing oil viscosity in low outdoor temperature.
For the control,compressor operates in low frequencies.

Operating condition :in case of the following 3 conditions are fulfilled at the same time.
- Outdoor temperature, D-pipe temperature, Heat sink temperature : below 0°C,



❉ All Model is fitted with sump heater.

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3. Protection control

3.1 Discharge Temperature control

3.1.1 Discharge pipe control for Inverter compressor

1) There can be two situations

(a) Sensor is failed (error code for sensor failure will be generated)

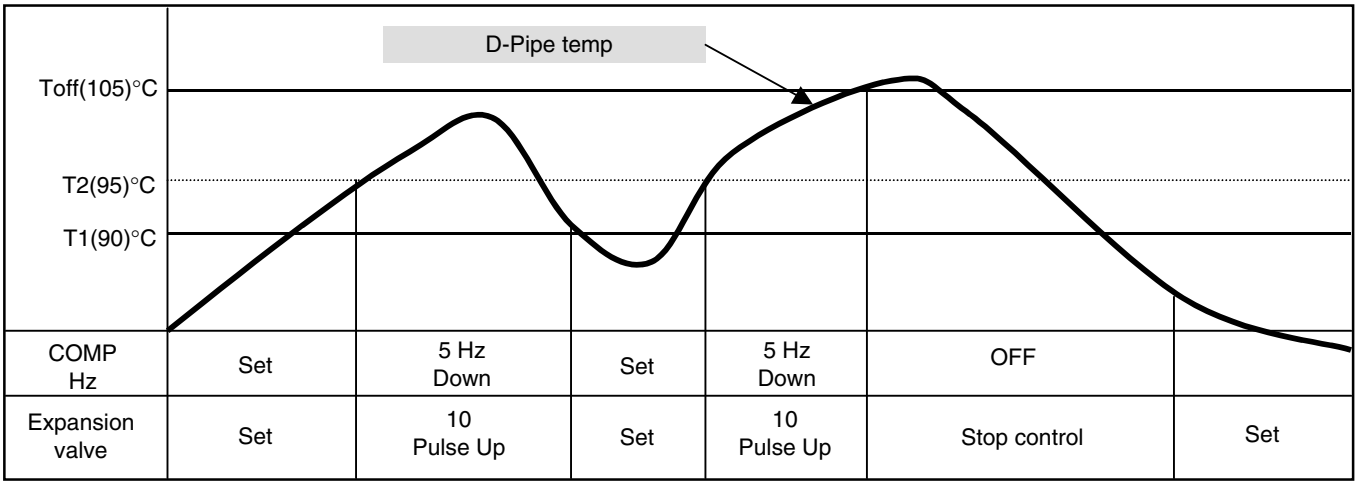
(b) Abnormal high temperature discharge temperature (error code for high discharge will be generated) Both cases unit will stop.

2) Compressor working

(a) If discharge pipe temperature < T1 No limitation on compressor frequency

(b) T2 ≤ discharge pipe temperature < T off (Hysteresis control) Compressor frequency down by 5Hz and expansion valve up by 10 pulse in every 1 min.

(c) Discharge pipe temperature ≥ Toff Compressor will be off
System will stop if this situation occurs 5 times in 1 hour and error code will be generated.



COMP Hz	Set	5 Hz Down	Set	5 Hz Down	OFF	
Expansion valve	Set	10 Pulse Up	Set	10 Pulse Up	Stop control	Set

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3.1.2 Discharge pipe control for constant compressor

1) There can be two situations

(a) Sensor is failed (error code for sensor failure will be generated)

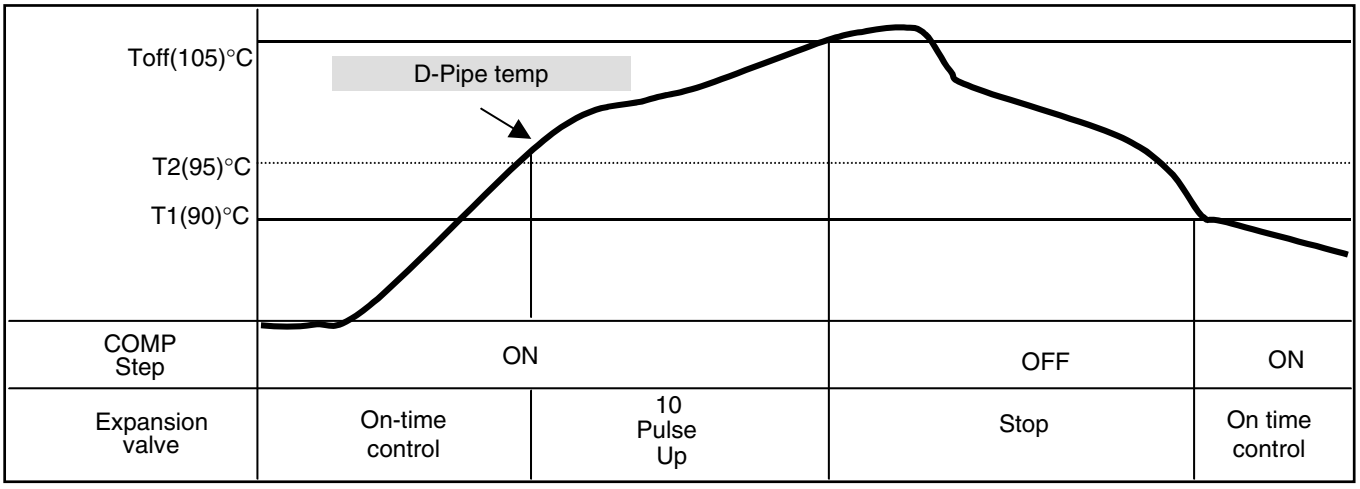
(b) Abnormal high temperature discharge temperature (error code for high discharge will be generated) Both cases unit will stop.

2) Compressor working

(a) If discharge pipe temperature < T1 Compressor ON, LEV on-time control

(b) T2 ≤ discharge pipe temperature < Toff (Hysteresis control) Expansion valve up by ßpulse every 1 min. If LEV is in the starting control it will follow it as it is.

(c) Discharge pipe temperature ≥ Toff Compressor will be OFF
System will stop if this situation occurs 5 times in 1 hour and error code will be generated.



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3.2 Inverter Protection control(1)

3.2.1 Function

: Controlling total power current to protect power semiconductor devices from burn-out by the low current (including connecting mistake) and over current.

3.2.2 Operating process

1) Detection : check the output DC voltage of Current Transformer(CT).

2) Current Transformer Sensing Error

a) In initial power input, if the CT output is over 4.0V (25A) it shows Self-Diagnosis Error Mode 40 (defect in CT sensing)

3) CT 1 detection :

a) If total current exceeds CT1 value.reduce 1 step of operating Hz.
- Step down 10Hz from current step.
- If new Hz is below (cooling : Fc min,, heating :Fh min), then turn off the compressor.

b) After step down,if the total current exceed i1 for more than 5 sec. then step down 1 more step.

c) If the current continue below i1 for more than 1 min.,return the Hz to setting Hz.

4) CT 2 detection :

a) If total current exceeds CT2 turn off compressor.
And after 3 min turn on the compressor and check the current again.

b) If CT2 occurs 5 times in 1 hour,stop the operation and shows Self-Diagnosis Error Mode 22

Model	cooling (CT 1)	heating (CT 1)	CT 2
36k	8A	9A	10A
48~60k	11A	11A	12A

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3.3 Inverter Protection control(2)

3.3.1 Function

: Power module failure protection by checking the temperature of heat sink.
There is a temperature sensor for checking the heat sink temperature.

3.3.2 Heat sink sensor failure error

Short Check : if temperature ≥130°C

Open Check : if temperature < - 30°C

System will go in self diagnosis (error 65) is displayed and product stops.

3.3.3 Heat sink temperature control

a) Heat sink temperature < T2 : No limitation on compressor frequency

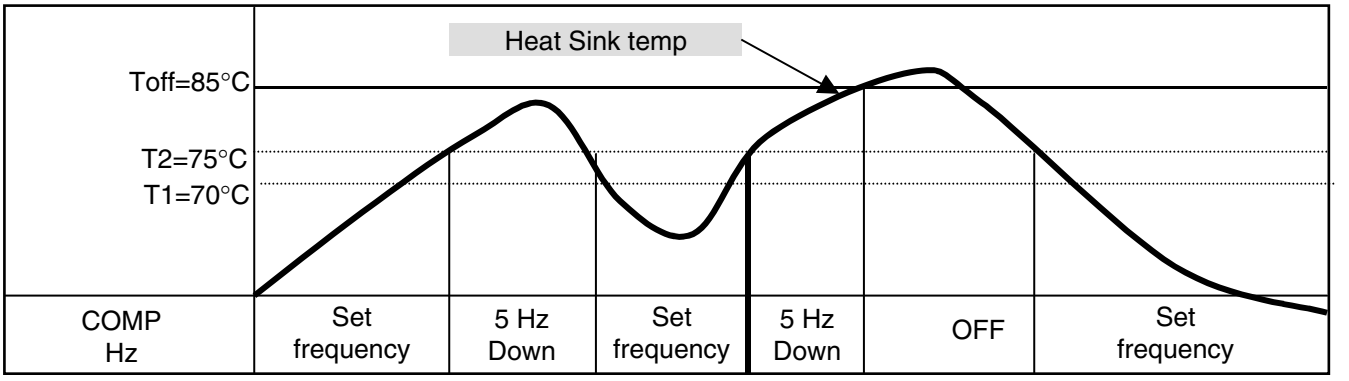
b) T2 ≤ heat sink temperature < Toff : Compressor frequency down by 5 Hz

c) Heat sink temperature ≥ Toff : Compressor will be off.

System will stop if this situation occurs 5 times in 1 hour and error code will be generated also self diagnosis will start.

If high temperature situation occurs 5 times in 1 hr system counts 1 error and after that 4 times if this situation occurs system stops and give error code.

If the temperature reached Toff condition system will count 5 times after that and system will stop with error code.



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VII. Exploded View

Indoor Unit 139

Outdoor Unit 148

Panel Assembly, Front 152

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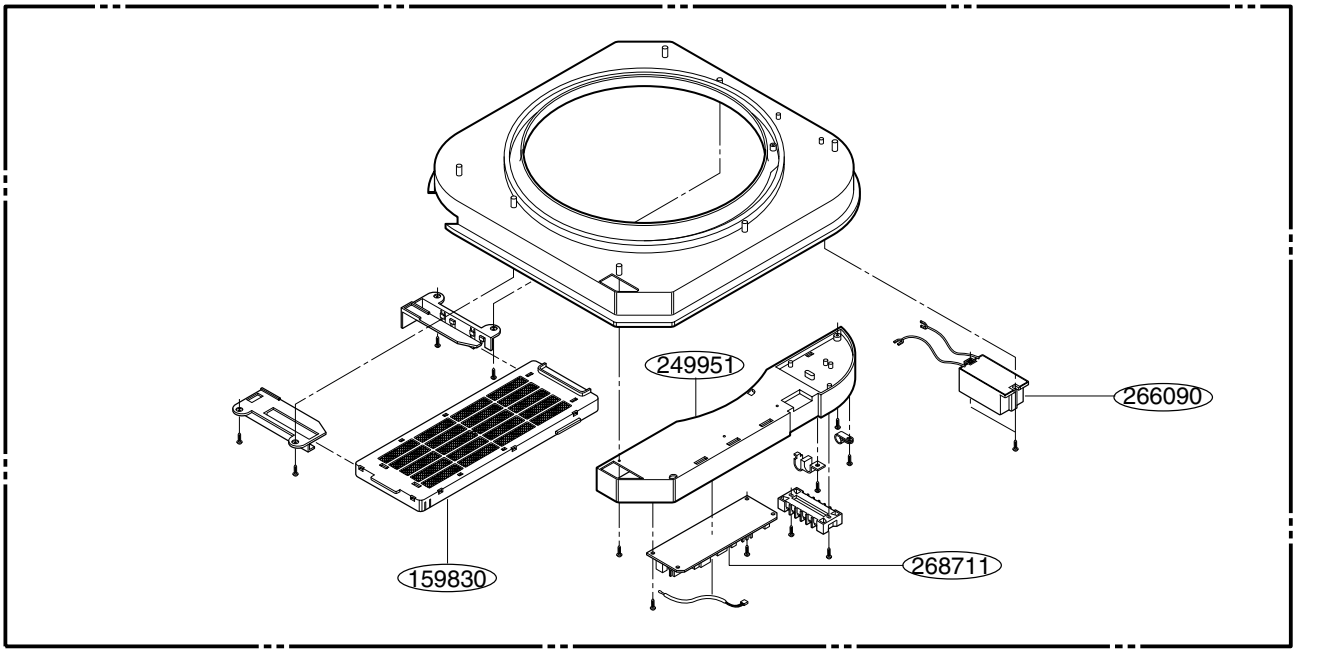
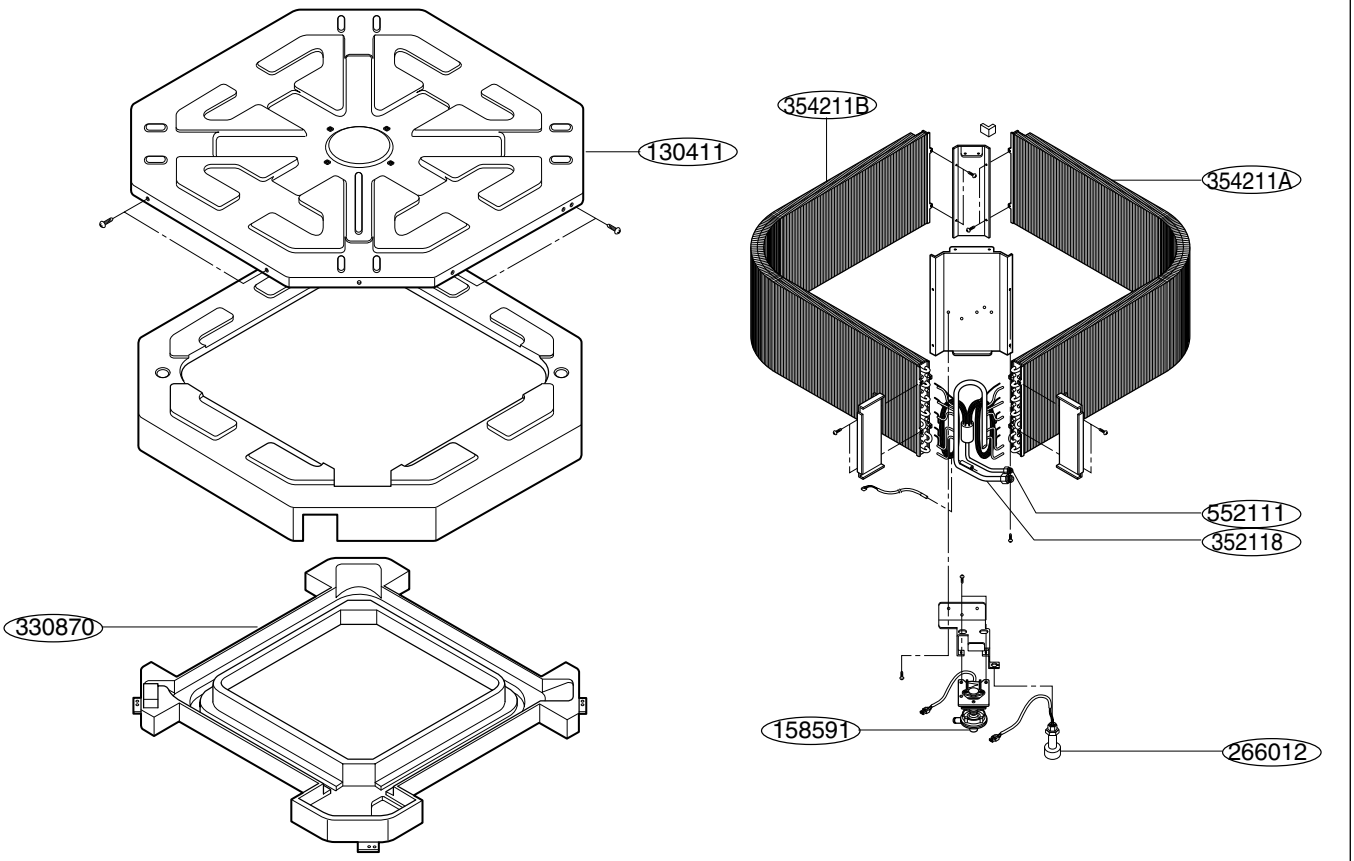
Indoor Unit

Ceiling Cassette Type

ATNH-DL





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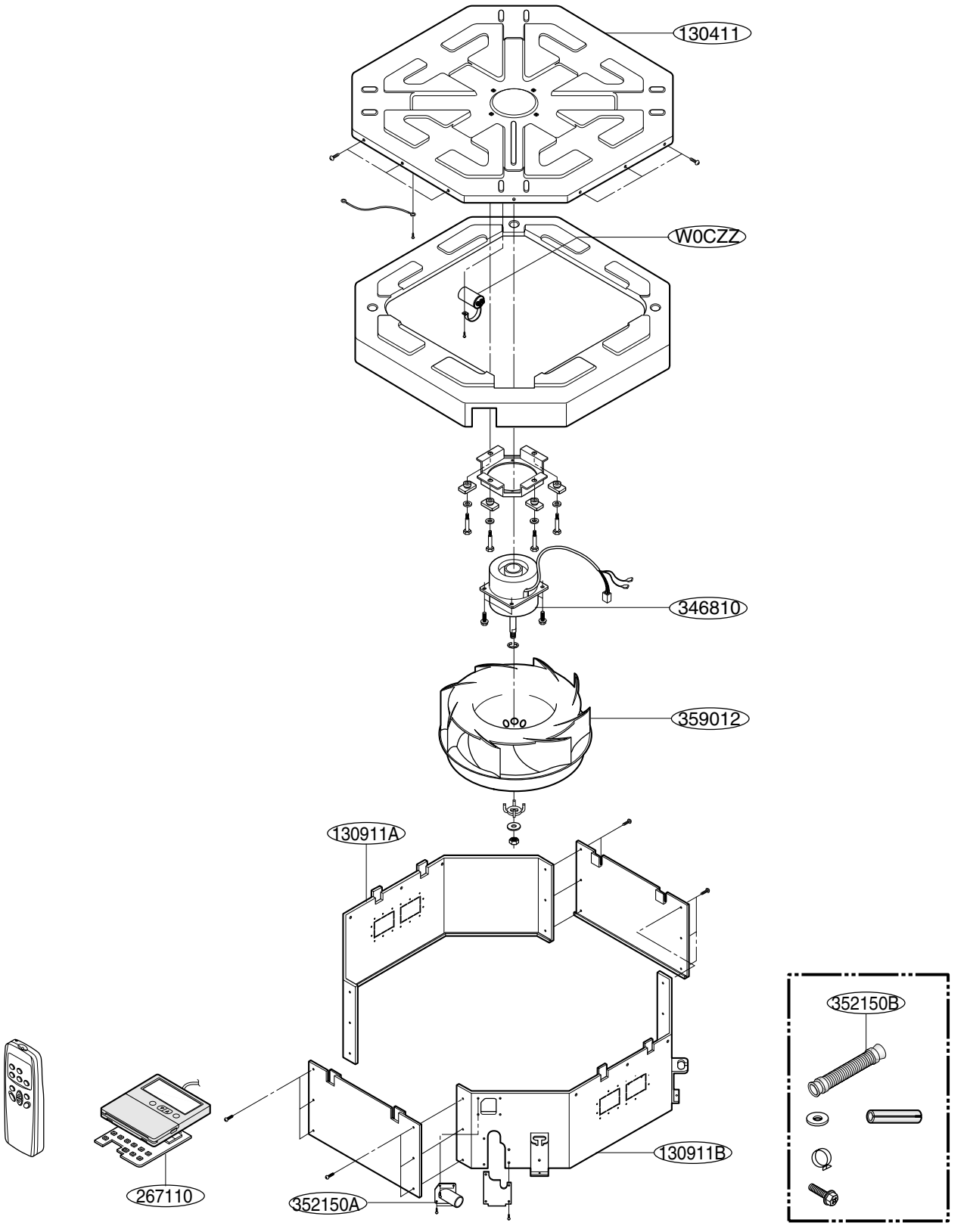

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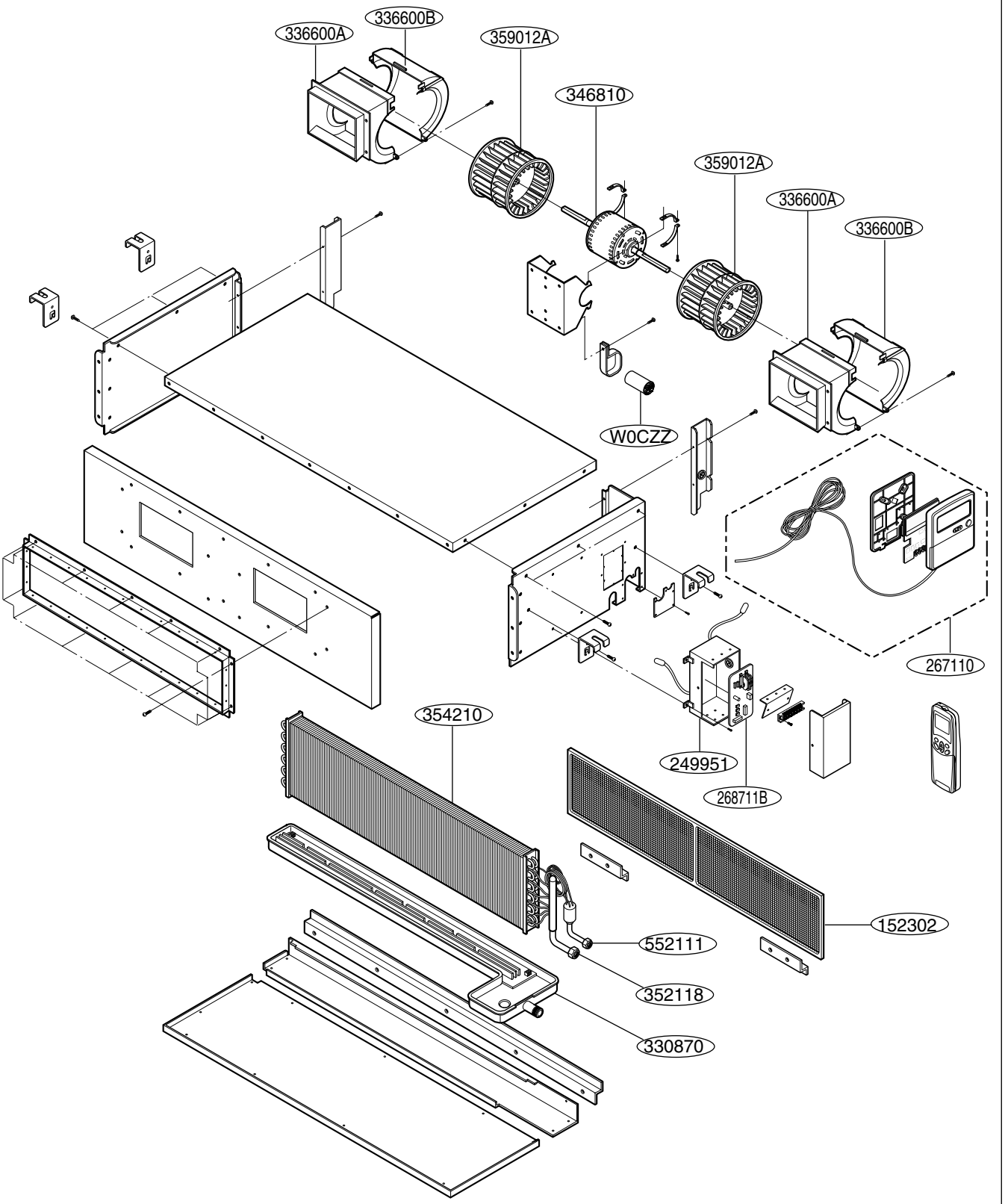
ABNH-HL, ABNH-GL



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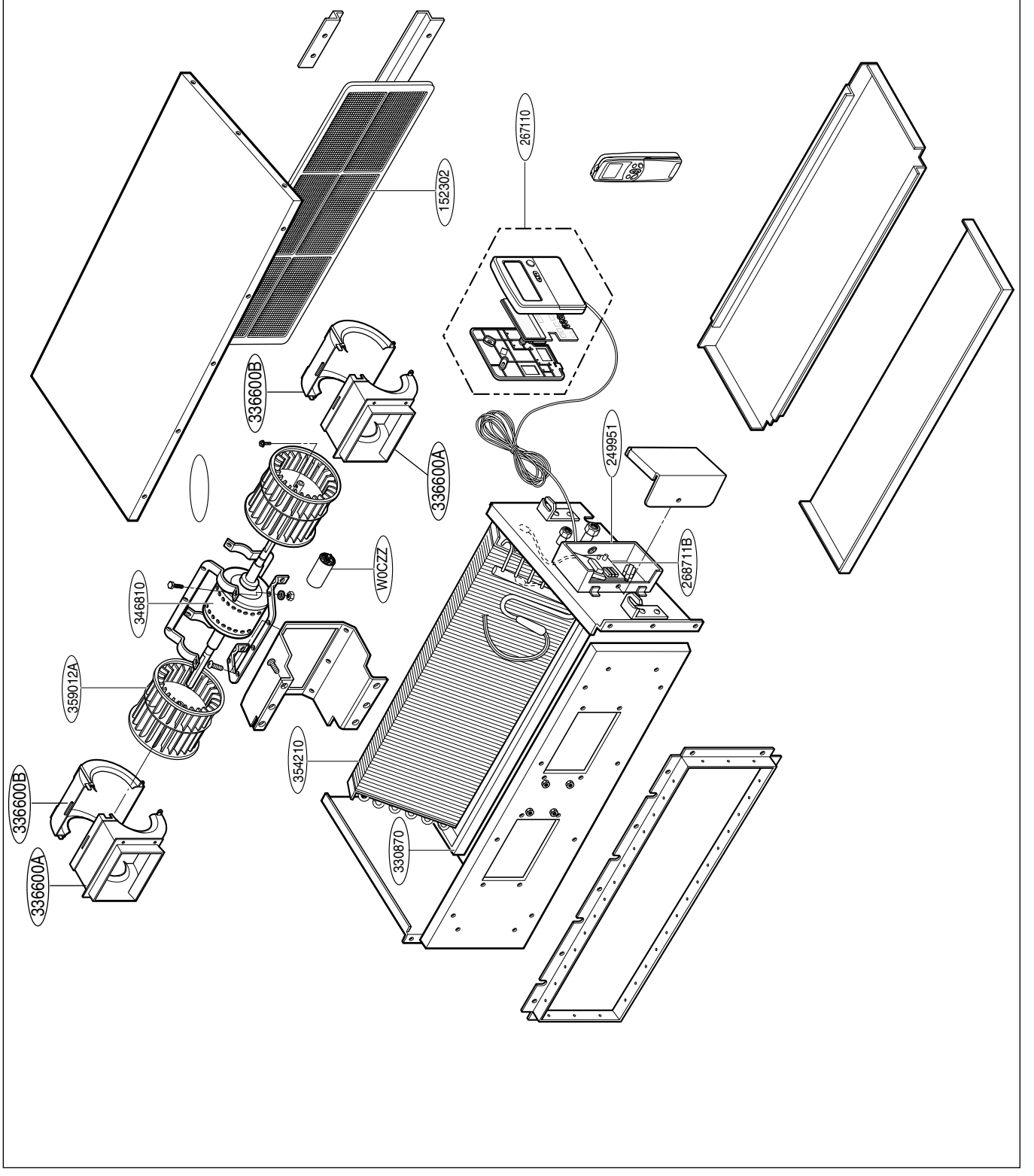

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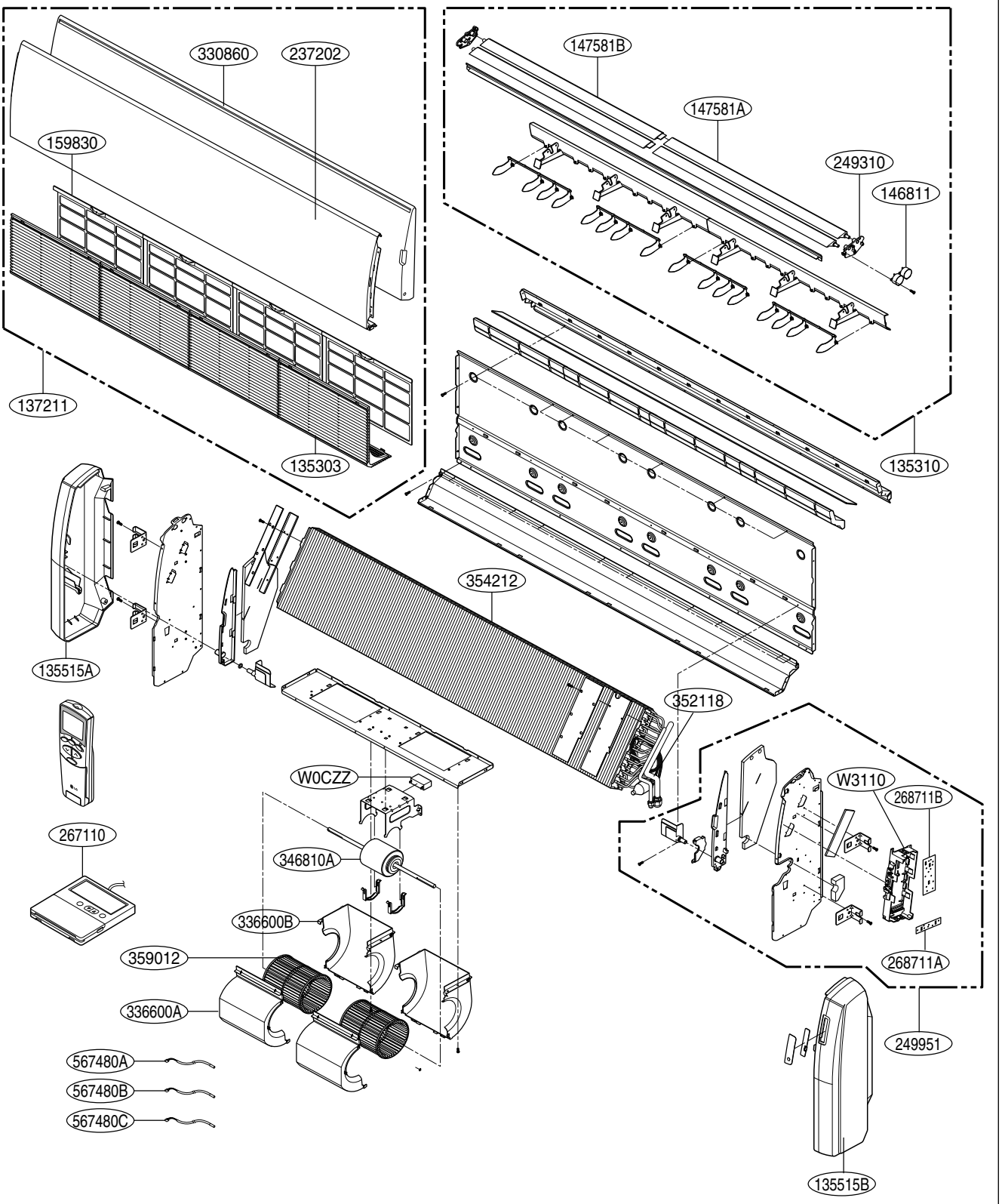

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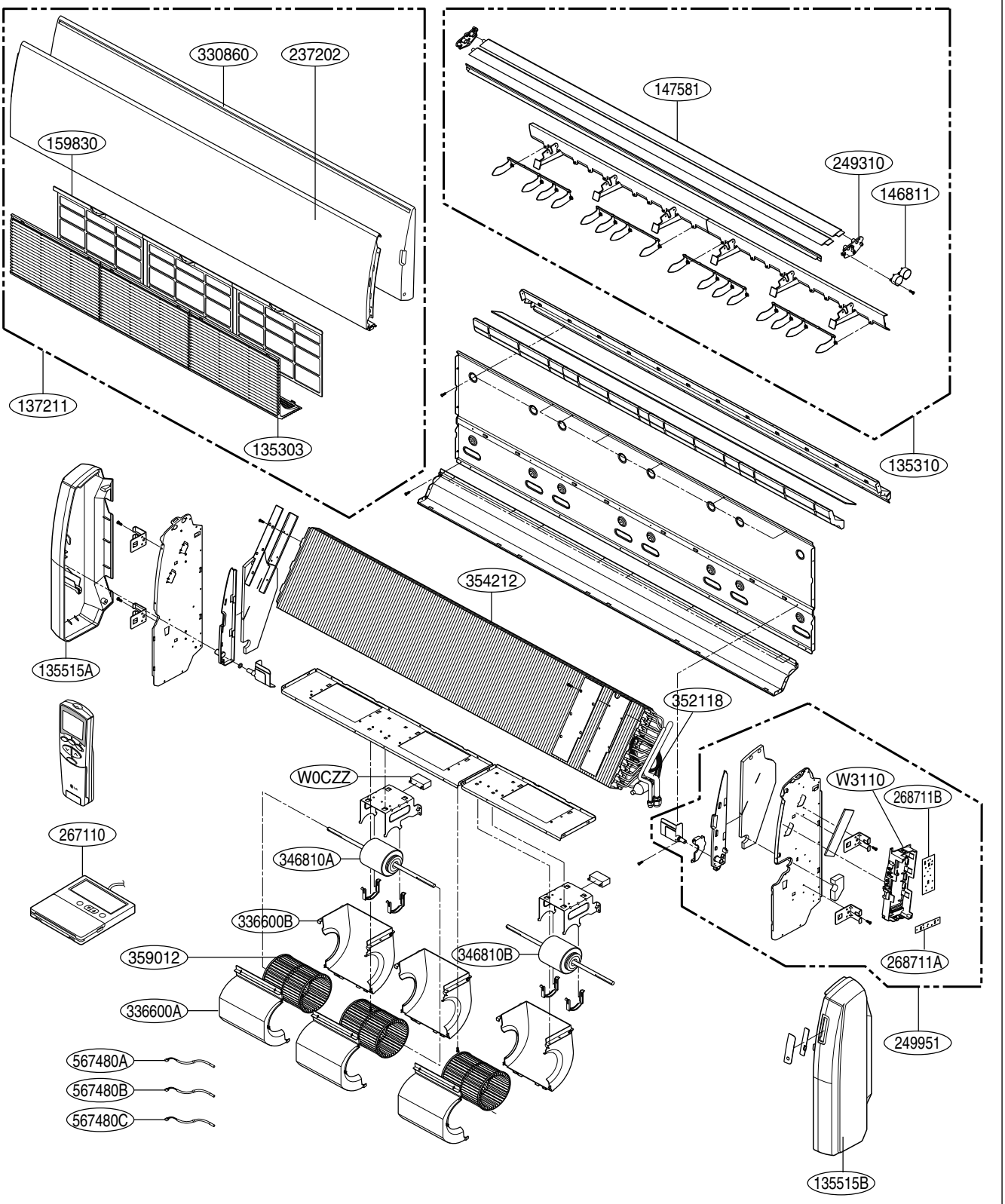

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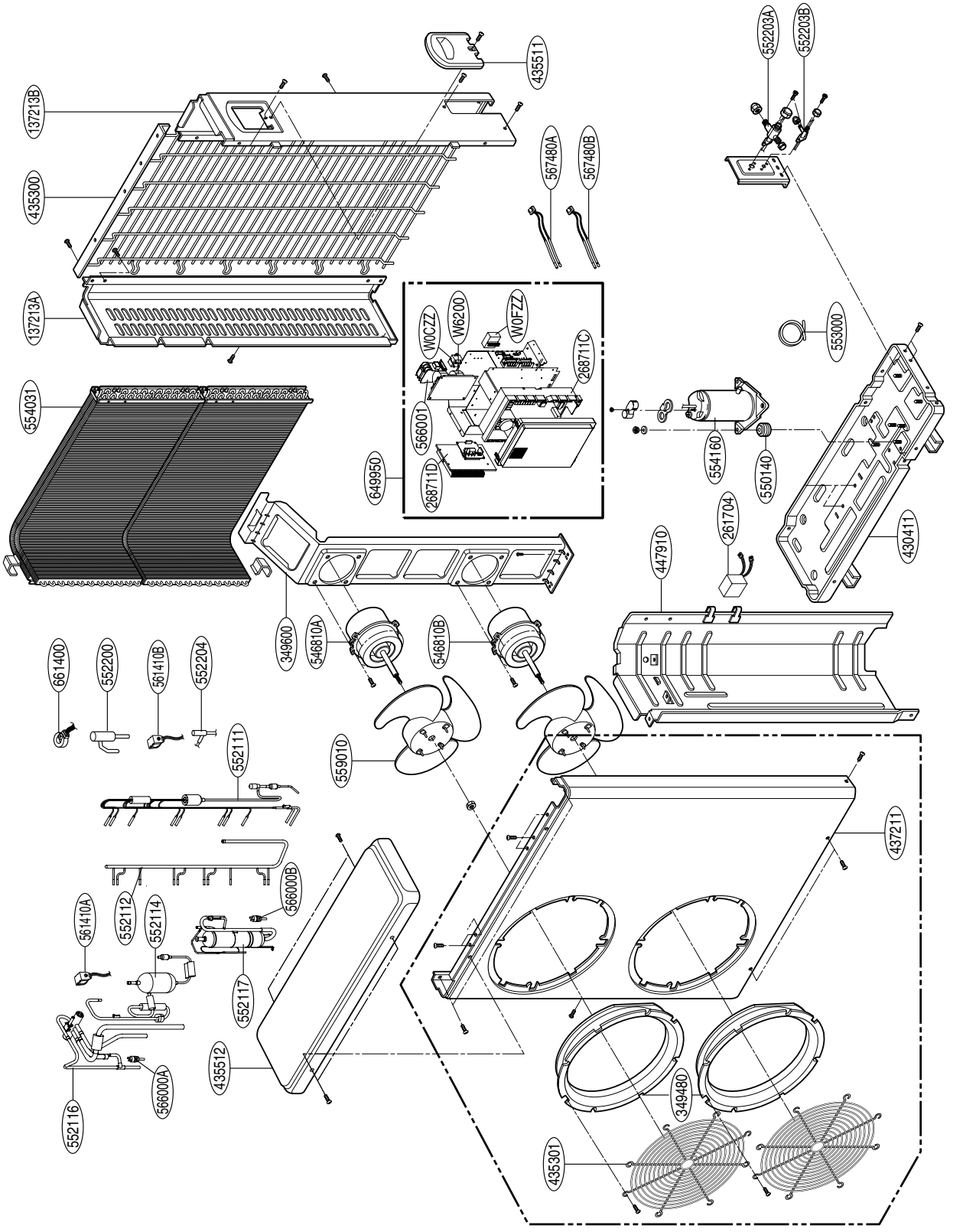
Outdoor Unit

Model No.: AUUW368C / AUUW368C1



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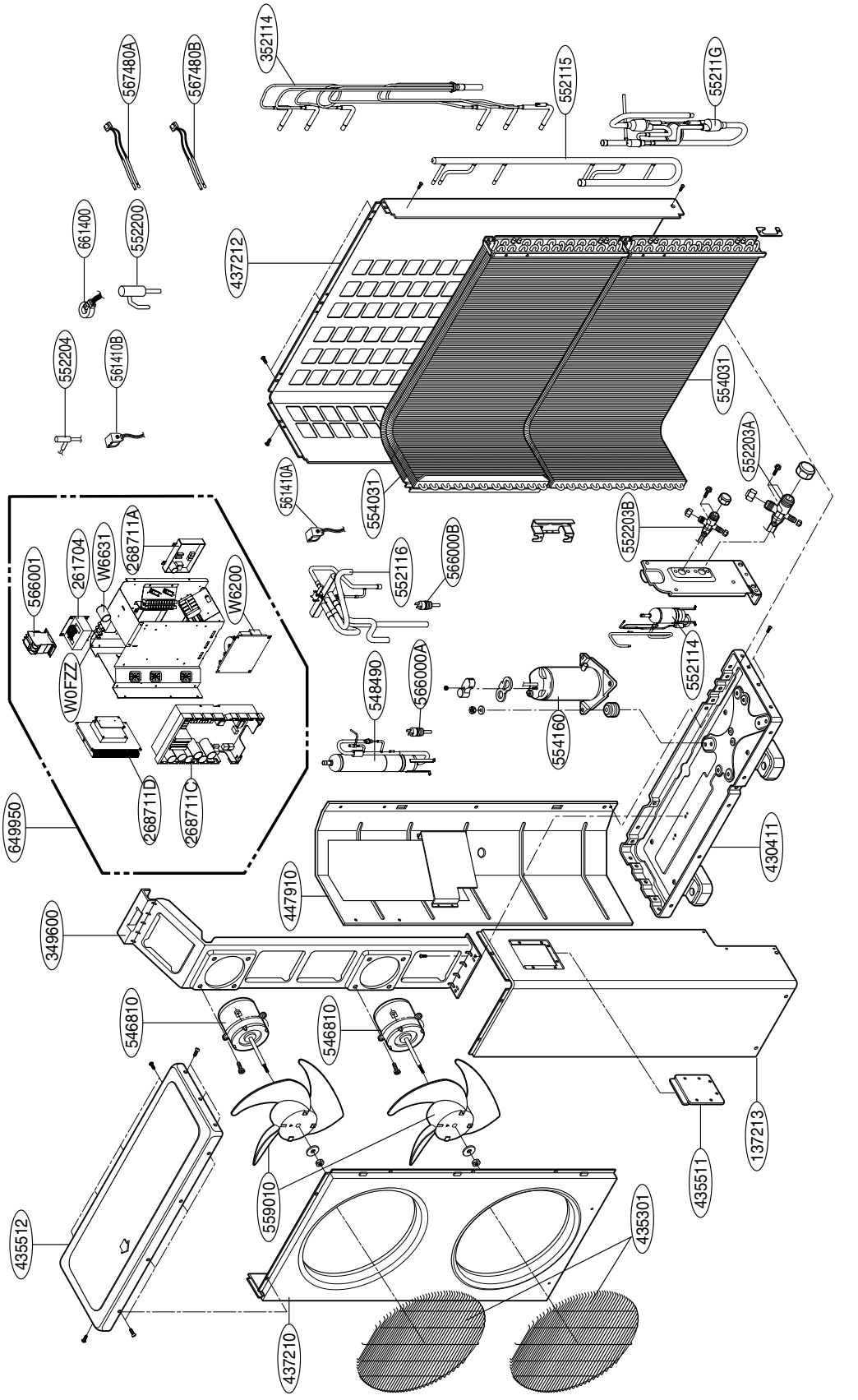
Model No.: AUUW428C/AUUW488C/AUUW608C



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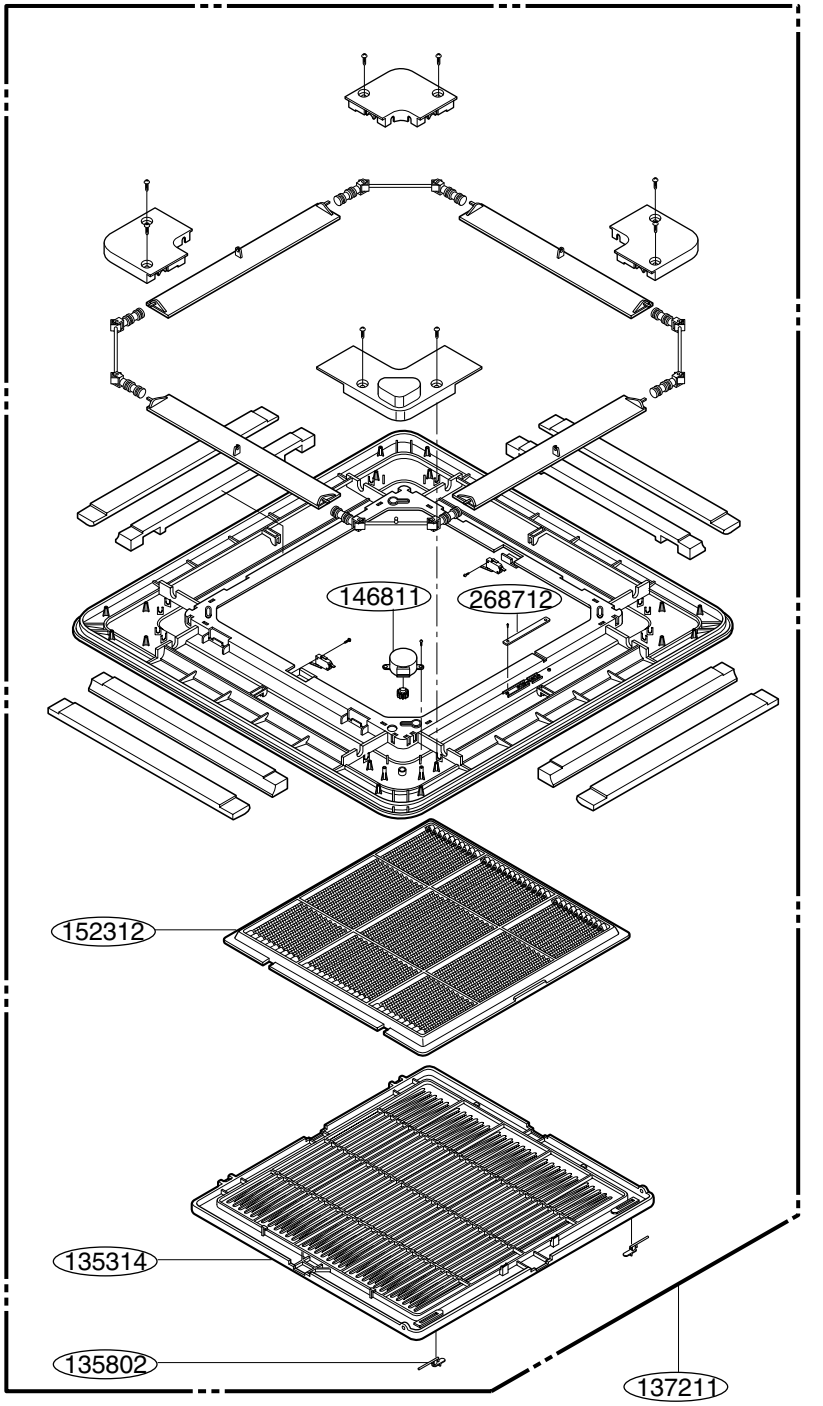
Panel Assembly, Front

PT-HDA1/C1



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